

The Iron Age

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A Review of the Hardware, Iron and Metal Trades.

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The McKenna Direct-Acting Gas Furnace.

The all-absorbing question before iron and steel manufacturers outside of the natural gas region is, and has been for the past few years, either to introduce some system of working that would enable them to compete with that matchless fuel, or to remove their works to the immediate vicinity of the gas fields. The first part of the problem has been tried, with indifferent success, by some manufacturers, and others have invested their capital in and around Pittsburgh, while several of the largest concerns in the country have been over the ground, with a view of removing their works. Our illustration, which represents the McKenna direct draft melting, heating and puddling furnace, has a bearing on this subject worthy the attention of those contemplating the erection of costly gas furnaces, to supplant their present coal furnaces, which are so wasteful of both fuel and material. The furnace shown was first introduced at the Soho Mills, Pittsburgh,

of furnace, in the space formerly used as an ash pit, and the gas and air-heating chamber put in position directly over the furnace. The hot gas direct from the producer, being still further heated by the gas flue passing through heating chamber, passes upward into the gas flue at A and enters the furnace highly heated at B. The cold air under pressure enters the air pipe in the heating chamber at F and goes into the furnace, also highly heated, at H, directly over and in front of the incoming column of gas, into which the air is forced after thorough mixture. Combustion is produced at a temperature equalled only by the Siemens furnace. The products of combustion then pass over the bridge wall to the working bed of the furnace, and on to the opposite end, where the waste heat is carried upward by two flues into the heating chamber over the furnace. There it heats both the gas and air pipes, passing then by the flue at D and entering the stack at E.

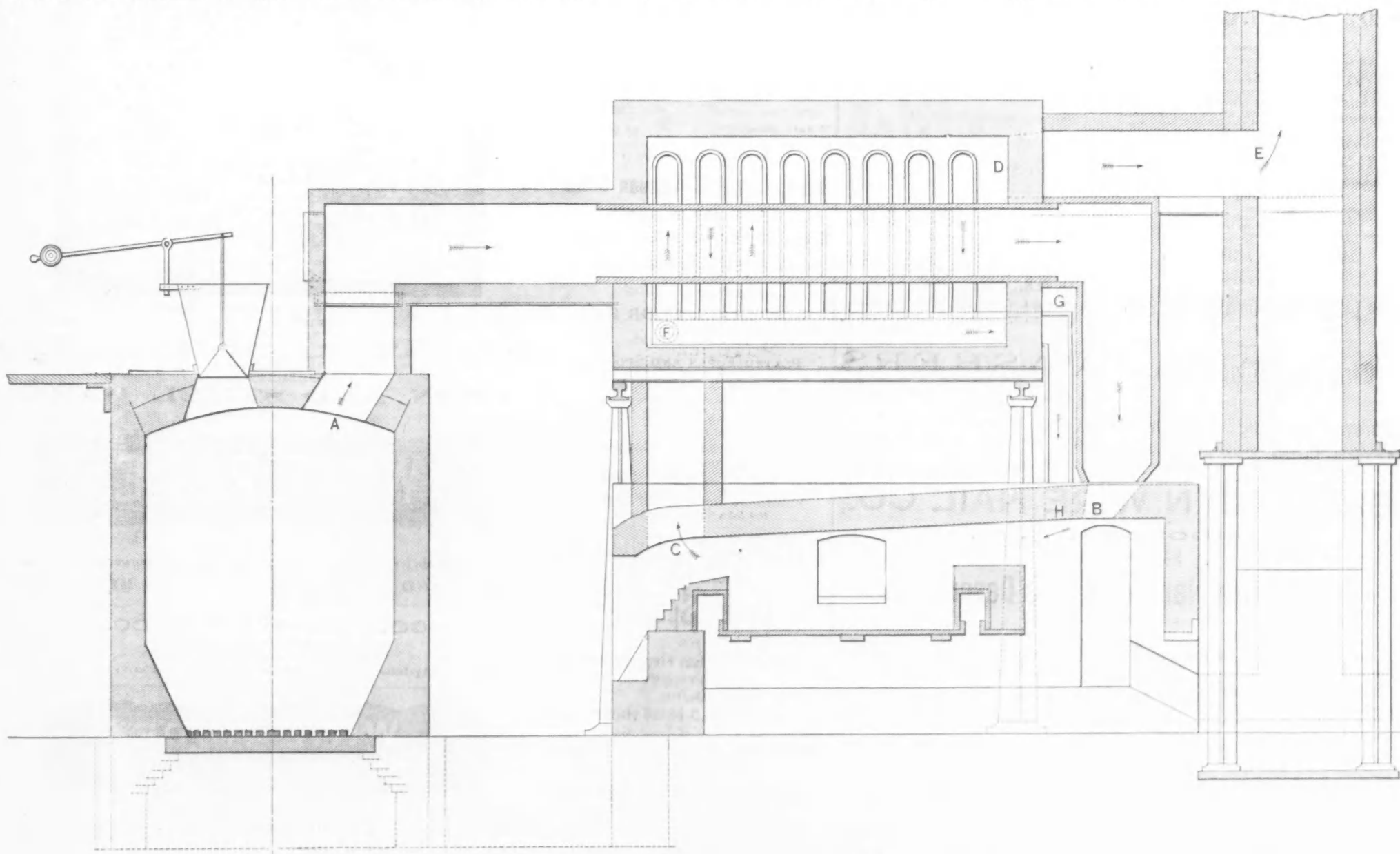
A chamber for the collection of soot is provided for under the gas entrance to the furnace and behind the bridge wall, from

fraudulent and illegal use of power as well as for the purpose of clearly and definitely defining the rights of both sides. But these laws were found to be far too stringent to suit the views of the monopolist pure and simple, the man who pursues the dollar for the purpose of capturing and holding it for his own, regardless of the rights and claims of others, and hence the ingenious device of what is to-day known as a "Trust" has been invented, and the very general adoption of the system shows how well adapted it is to the wants of those for whom it was devised. A Trust is nothing else than an attempted evasion of all legal restriction, an effort to avoid and get rid of all legal responsibility. It is ostensibly created with the avowed object of regulating production, harmonizing competition, placing invested capital in a position to become remunerative by the exercise of greater economy, the guaranteeing to the public standard quality, steadiness of prices, and to eliminate the many evils that arise from keen competition. But it may be asked has it thus far fulfilled these avowed objects in any one instance, and

is in constant competition with more powerful establishments. Their accession to the trust increases its power, and gradually it continues to absorb first those that willingly come in, then brings pressure to bear upon those that hang fire and finally proceeds to freeze out those that resist and show fight. That has been the history of the completion of the famous Cotton Oil Trust, and such must be the history of the formation of every other trust of a similar kind. Its relation to capital is not unlike that of the various labor organizations to labor. In the latter case, however, combination has been the instrument of warfare which wage earners have used from the earliest times, while combinations among manufacturing concerns and the trust system are of comparatively recent date. In fact, with one exception, that of the Standard Oil Company, all the various trusts have sprung into existence within the past two years, and we now have either in practical operation or in course of formation trusts that are to control and monopolize the manufacture of cotton seed oil, whisky, linseed oil, gas, india rubber

Preventing Noise on Railway Bridges.

The Government managers of the new city elevated railway in Berlin, says the *American Architect*, have, according to *La Semaine des Constructeurs*, taken a great deal of pains to diminish the noise of trains passing over the viaducts and bridges, which, of course, form the principal portion of the road. Wherever possible, the viaducts are built of brick or stone, and the sound of the light trains running over these is not very annoying; but arches of masonry cannot well be used in crossing crowded streets, and the metallic structures employed in such places rattle and reverberate in a manner which is considered very suitable to the nerves of the people of New York, but which the Germans are not disposed to endure. In experimenting to find means for overcoming the trouble, it is found that the form of the bridge does not perceptibly affect the noise from it, a lattice truss, notwithstanding the multiplicity of joints, producing no more sound than a plate girder; but the length is a very important factor,



THE M'KENNA DIRECT-ACTING GAS FURNACE.

in 1885, being applied to plate-heating and scrapping. Then two single puddling furnaces were taken down, made a little wider, had chill plates and a bottom of Massillon sand put in them, when they were started up and worked regularly for a period of about six months. They produced hundreds of tons each of both pig and scrap and pig and ore open-hearth steel, the carbon ranging from 0.03 to 0.20, making at times three heats in 22 hours, and being the only direct-draft furnaces that had succeeded in accomplishing what had hitherto been done only by the Siemens reversing furnace. The furnaces, however, were too small (5000 to 6000 pound-charges) to compete with larger ones running with 15 to 30 tons per heat, and had also some minor defects, which have been overcome in the present furnace, which is the design of McKenna, Ryan & Son, Pittsburgh. Three steel melting furnaces built on this plan—one of 10, one of 15, and one of 20 tons capacity—are now working at the Government Arsenal, Woolwich, England, with a fuel consumption of only 5.18 cwt. of coal per ton of ingots made, and a furnace loss of material of 6 per cent.

The principle can be applied to any of the old style of furnaces, except those having boilers placed over them, as is the case in some Eastern mills. Its mode of operation is as follows: The working bridge is taken from its present position at the grate end of furnace and placed at the opposite end, or what is now the neck. A Siemens, Wilson or Wellman gas producer is put at the end

which it is taken by the flue, shown in dotted lines, through the bottom of the stack. A door is also placed in the uptake on top of the gas producer, directly in front of the gas flue, which enables the gas maker to introduce a steam, or air blast to clean the flue when necessary. The entire operation is simple and effective, under good control, and can be applied at a comparatively small cost to iron mills, copper and brass works, glass works, etc.

Trusts.

The New York *Shipping and Commercial List* prints the following:

The tendency of the times toward the organization of "Trusts," for the purpose of transforming industrial enterprise into a huge monopoly, is neither a healthy nor encouraging sign, so far as our commercial and industrial prosperity as a nation is concerned, and it is time to hold out the danger signals, and cry, halt! The aggregation of capital for the purpose of carrying on large enterprises is not only necessary but beneficial; how else could the resources of this great country have been developed, her railroads built, her mines explored, and her enormous industries built up? To provide for such, the State has enacted laws governing the formation and operation of limited partnerships and corporations. The provisions of these laws have been the result of experience, and they have been drawn for the protection of the public against the

has it not rather practically resulted in benefiting those around whom the encircling arms of the Trust have been folded at the expense and to the detriment of the public. Kept within its legitimate design the prosecution of business under the Trust system can be made beneficial to all concerned, but the power it conveys, once obtained, and the abuse of that power in every form becomes the keynote of its management and the inspiration of its life and success. The enormous financial success of the Standard Oil Company set the example and fashion of this rage for "Trusts" and the grasping policy with which that monopoly has been managed is a fair sample of the way in which the majority of Trusts are likely to go, no matter how fair the promise with which they are inaugurated and the high character of those who stand as sponsors. Why, the very manner in which they are formed is of itself a sufficient condemnation of the system.

Take any single industry that has or is now passing into the trust system and what has been the *modus operandi*? Several wealthy and powerful firms or companies resolve to form a trust; they announce their determination to others engaged in the same industry and offer to let them into the charmed circle under stipulated terms and conditions. The small fry, recognizing that resistance would be useless and only result in their own destruction, readily accept the terms offered; it makes for them a good investment, relieves them from anxiety and the annoyance of conducting a business that

goods, straw boards, salt and sugar. Then there are land trusts, cattle trusts, street railway trusts and coal trusts. That they are revolutionizing the methods of conducting business it is scarcely necessary to point out, for it makes every interest to which they are related tributary to their power and dictation. It destroys what in commercial parlance is termed a market for raw material, for there is but one buyer, it effectually kills competition, which is the life of trade, it places the consumer at the mercy of the monopolist, who in a measure dictates his own terms. The tendency of this new departure is pernicious, it threatens evil to the community, and some remedy must be found and applied. Shall individuals and corporations, who are legally responsible for the way in which they conduct business, be allowed to hand all their interests over to trustees, and thus defeat the purposes of charters under which they operate? The people must see to it, through their legislatures, that this new form of monopoly is placed under proper restrictions and brought within the pale of the law. If they do not, it will only be a question of time until they are taxed the most exorbitant prices for the most common and necessary articles of daily use.

The length of telegraph lines in the Krupp works at Essen, Germany, is given as 70 km. (about 42 miles.) There are in the works also 40 telegraph stations and 60 Morse instruments.

so much so that the noise is considered by the German engineers to be directly proportioned to the span of the bridge. Where the rails rest on wooden cross-ties, or on timbers running longitudinally, the sound is less than where they are secured directly to the metal, and it may be still further diminished by placing cushions of felt or rubber under the timbers before bolting them to the bridge construction.

To cover an iron bridge entirely with planking does not appreciably diminish the noise from it unless the planking is covered with gravel, a thin layer of which has a marked deadening effect, while still more improvement is obtained by thickening the layer of gravel about the track so as to bury the cross-ties or longitudinal timbers on which the rails rest. Profiting by these suggestions, the Berlin engineers have adopted two different systems for diminishing the noise of trains on their viaducts. One is to bolt to the bridge structure long troughs of sheet iron, about 16 inches wide, so arranged that a rail will come in the center of each. The troughs are then filled with gravel, in the middle of which is buried the longitudinal timber carrying the rail, and the space between the troughs is covered with iron plates on which is spread a thin layer of gravel. The second method, which is found to be more efficient than the other, consists in placing a continuous series of shallow iron troughs, about 3 feet square, along the line of the tracks. These are filled with gravel, on which the ties and rails are laid.

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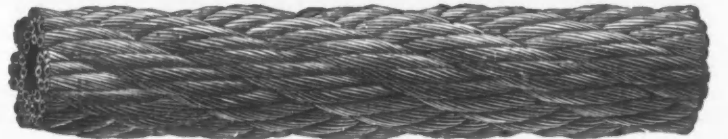
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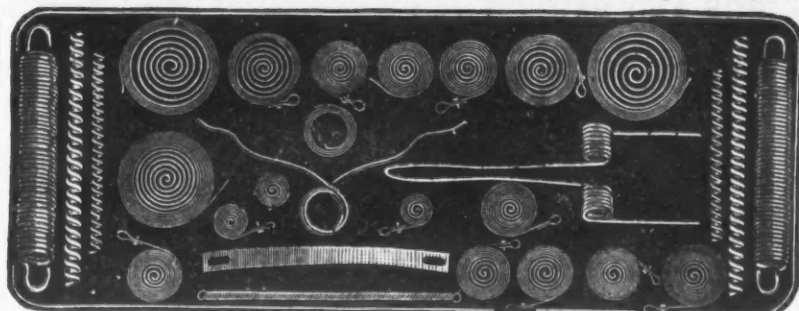
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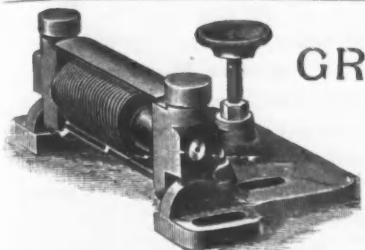
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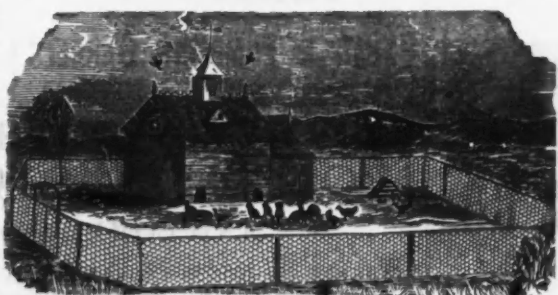
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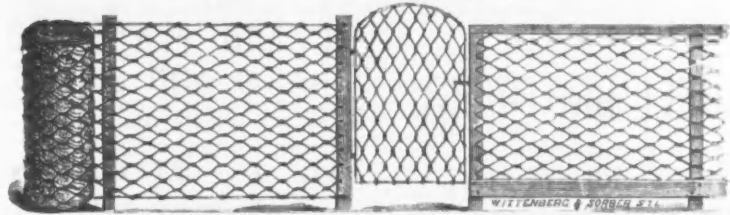


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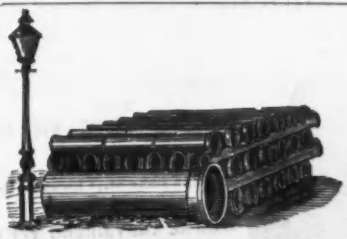
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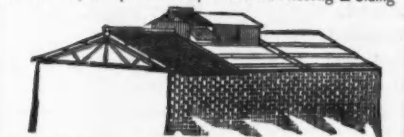
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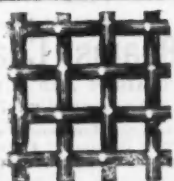
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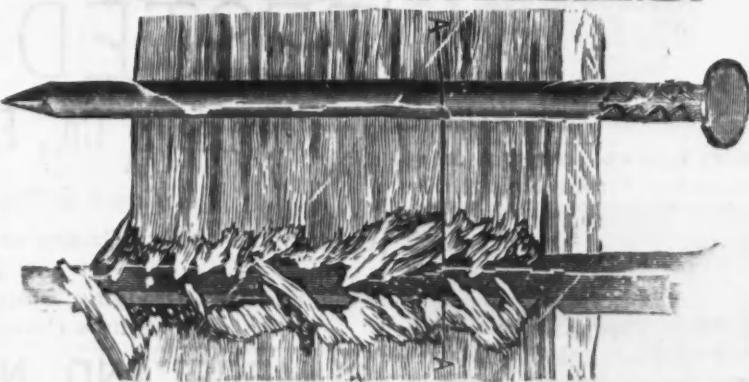
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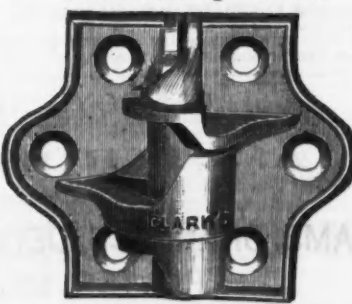
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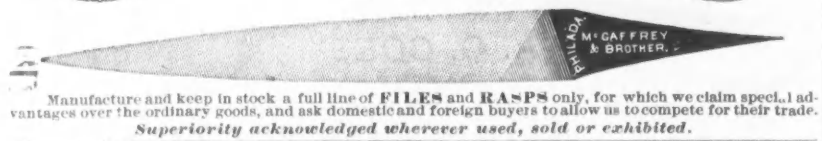
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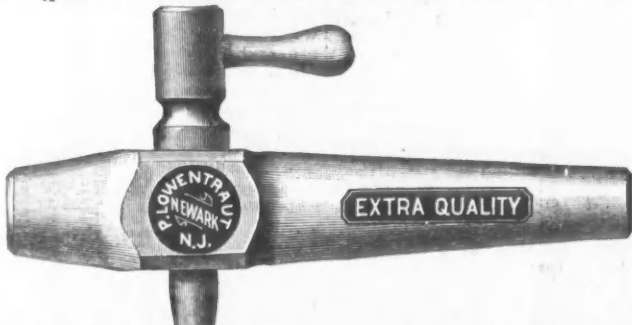
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" " " " " " " " " " " "	22	4	8	1.00
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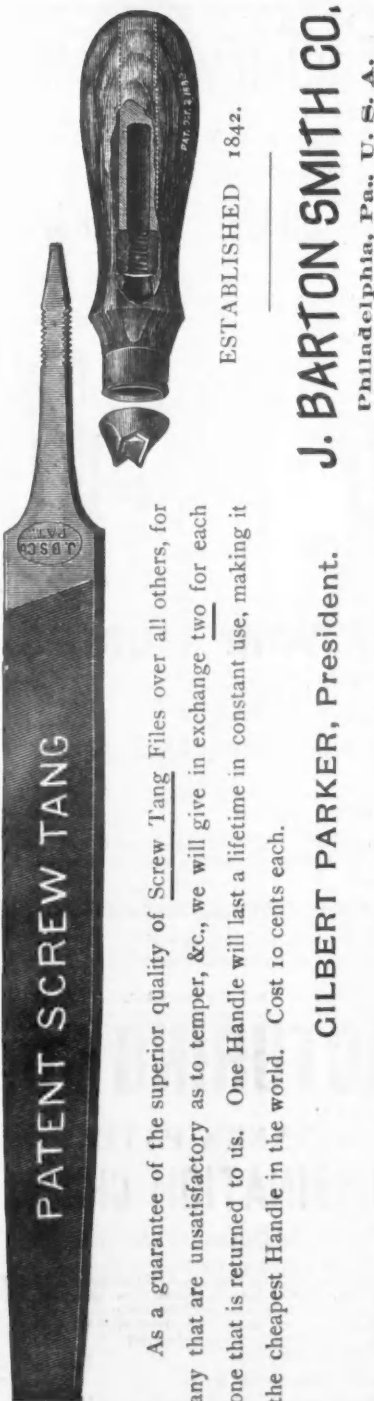
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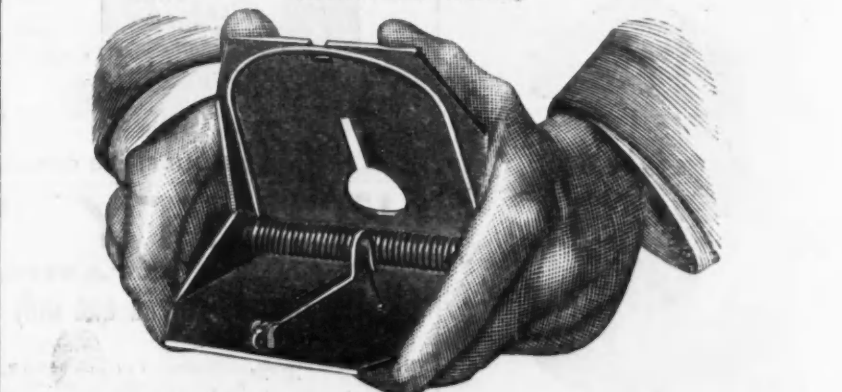
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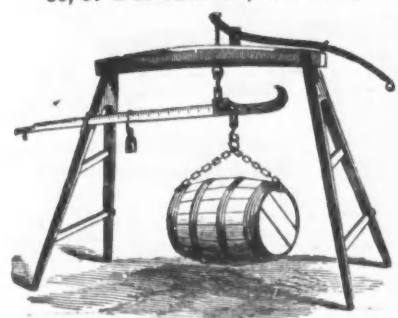
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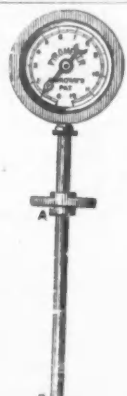
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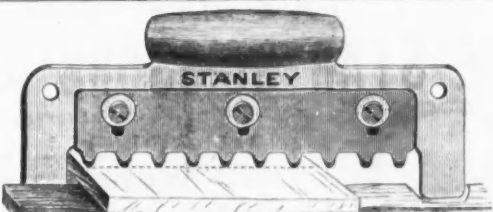
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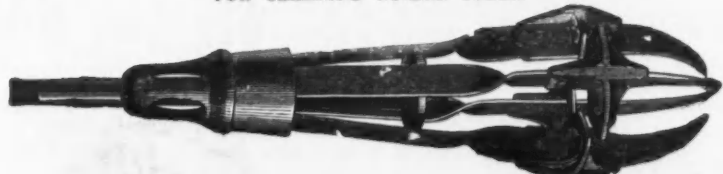
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Foreign Markets.**GREAT BRITAIN.**

(From Our Regular Correspondent.)

LONDON, September 26, 1887.

THE SITUATION

generally has not undergone much alteration since the date of my last, although Glasgow influences have been bearish, and the finished iron branches have been somewhat disturbed by reports of a failure in Lancashire and of others elsewhere. The failure in question in Lancashire is said to involve liabilities to the extent of about £40,000, some of the individual debts running up to £3000 or so, but as no official details have been published I refrain from alluding to the matter more pointedly. In South Staffordshire the market has been upset by the sale of the stock, amounting to about 2000 tons of various kinds of rolled iron, of Messrs. Dawes, of the Bromford Iron Works, who failed some months ago. Then, again, we have formal intelligence to day of the cessation of operations by Morewood's, a limited company, engaged in the galvanizing iron, structural ironwork, &c., branches. Of this affair I will say something presently, but I may state here that the climax now recorded has been expected for a very long time past, so that its effects upon the market cannot be very great—indeed, the bulk of the liabilities are doubtless in the shape of loans and advances on the plant and machinery. At Sheffield an old-established foundry concern has found it necessary to execute a deed of assignment, but the operations of the proprietary had long been confined within narrow limits, and the matter will probably pass over without creating the slightest ripple. None of these financial disturbances, however, are of any real importance, and they need not be looked upon as being likely to influence the near future of the trade to any appreciable extent. In the steel and steel rail trades attention is being directed to the great preparations which are being made by Cammell & Co. at Workington to extend their production. Another mill is being put down there, and the knowing ones in the trade allege that at anything like present prices for rails there will be only two English concerns "in it." I shall leave your readers to surmise who the other firm may be, but will say that my own information is to the effect that Cammell & Co.'s new mill is intended for light sections only, so that I fail to see in what way the additional output will be likely to affect the production or prices of heavy sections. Other gossips in the same branch of the Bessemer industry aver that another great concern is getting "sick" of rails and is quietly moving in more profitable departments of the trade, but of this also the present writer prefers to say little. Prophecies are dangerous things in matters of trade and commerce—indeed, a pretty long and varied experience has taught me that it is often unsafe even to chronicle accomplished facts.

THE IRON MARKET

is not quite so firm, perhaps, but the altered tone is trifling. In its legitimate aspects the iron trade is fairly steady, and there is a considerable amount of business in hand, but values do not move in an upward direction. At Glasgow warrants have been rather weak, and closed at 41/7 1/2 ton. The shipments are comparatively good, and less iron is going into the stores just now, but the bad prospects in the shipbuilding trade have depressed the market. In Scotch special brands there is a weaker tendency, and the consumption is not other than normal. At Middlesboro' the general course of the pig iron markets is about the same as last week, although in some quarters there is a tendency to quote about 3d. 1/2 ton less for No. 3 G. M. B. Shipments are well sustained, and the outlook is held to be good. Hematite pig iron is a shade easier as regards mixed numbers, which are about 45/ at Middlesboro', and 44/ at 45/ on the West Coast. The shipments of this class of pig iron from the West Coast ports this year are appreciably less than those during the same portion of last year. In Lancashire, Lincolnshire, Derbyshire, Northamptonshire, Staffordshire, &c., crude irons are about the same, and there is not much new business about, but there are beginning to be negotiations for supplies during the final quarter of the year. In respect of these buyers offer rather lower prices, which producers tentatively refuse to recognize. In the heavy branches of the iron trade there are no features to note, other than that good orders continue to be given out for railway ironwork, engineering requisites and the like. Ordinary finished iron is quiet, although there is a good turnover in some branches. The bulk of the bars, plates, rounds, strips, &c., produced, however, is sold at low prices. As the end of the quarter is nigh at hand many merchant orders are being delayed until it is clearly seen how values are likely to go at the quarterly meetings next month. In old rails and scrap there is not much doing either for export or on home account. Freighters are much the same. Pig iron by ordinary steamer from Glasgow to New York is about 7/6 1/2 ton. Steel is without particular alteration this week, the whole of the works carrying on any of the newer processes of steel making being well engaged. The good demand for rails of late may possibly have lessened the competition of the Bessemer steel producers in rolled sorts, but the substitution of steel for iron is constantly going on, and the demand for billets, bars, flats, rounds, sheets, hoops, &c., of the Bessemer material, is sufficient to keep several large concerns fully occupied. For blooms and billets there is some American inquiry, and a few sales have been effected, but the aggregate new business for your market is not heavy. Blooms are about 80/ at 82/6, and billets 80/ at 85/, c.i.f. New York. Steel sleepers are being freely produced, but no fresh contracts of moment are mentioned. At Sheffield the crucible steel works are pretty well engaged, those devoted to special castings and forgings being busy. Steel rails are still about £4. 2/6 at £4. 7/6 1/2 ton, according to section, weight and date of delivery. The mills are fully engaged, as a rule, but in some instances the future

beyond about two months hence is beginning to need consideration. In several cases, however, work is assured for many months to come.

TIN PLATES.

In London there is no material change. I still quote ordinary brands of IC cokes 13/6 @ 13/9, f.o.b. Liverpool. The late failure in Liverpool, however, seems to have somewhat weakened the market. At Liverpool the market has been rather quiet, and as there are many sellers at present prices, it must of necessity become easier still. The general demand for ordinary sorts and sizes has not been great, but there are some fairly large inquiries for special lots in well-assorted specification. Most of these, however, are for Siemens-steel plates, with coke tinning; Bessemer-steel plates in the same grade and a few for coke-tin plates. Many of the inquiries for the latter are for the Continental markets, and though these individual orders are not large they are numerous. The other sorts of plates for which there is a good demand are coke-tin wasters and steel-coke wasters. For charcoal-tin plates andterne plates there is but a poor demand. The prices for charcoal-tin plates range from 14/6 to 15/6; for best charcoals from 16/ to 17/6 IC. Terne plates are still quoted from 25/ to 28/. There is a better demand for the wasters of these at from 23/6 to 25/. Coke-tin wasters and steel-coke wasters, 12/6 @ 12/10 1/2; prime coke-tin plates, 13/ @ 13/9 IC; Bessemer-steel cokes 13/3 @ 13/9 IC, and Siemens steel cokes, 13/6 @ 14/ IC.

CHILI.

VALPARAISO, AUGUST 8, 1887.—Copper.—While European cable quotations remained steady during the fortnight the market has been ruled by exchange fluctuations, ranging between \$5.50 and \$16 1/2 quintal, L-ta selling at \$15.50, which equals £39. 13/7 in London, total sales reaching 10,750 quintals. Nitrate was sparingly offered, and at the same time suitable vessels are scarce, so that sales were limited to 37.00 quintals at \$2.70 for 95%, equaling 8/4 in England. 1st of 90.00 quintals is still reported sold at \$2.70 at Iquique. July shipments to Europe amounted to 38,000 tons, and to the United States to 3,000; loading, 70,000 and 700 respectively. Charities for Europe 19,300 tons during the fortnight. Coal on speedy delivery is firm, whereas July-August shipment does not sell easily. We quote Newcastle Ste in Coal, spot, 32/ nominally; July shipments, 26/6, and Oriz, 25/. Exchange, 90 days' sight on London, 25d.—Weber & Co.

EAST INDIES.

MANILA, September 19, 1887.—Hemp.—There is a good demand at 22 1/2, 6 1/2 @ 13, f.o.b. current quality. Receipts at all Philippine ports since January 1, 354,000 bales; shipments to England per steamer, 106,000; per sailing vessel, 5,000; to the United States, 150,000; to other points and local consumption, 30,000. Loading for the United States, 30,000. Exchange—Six months' sight, 3/9.—Smith Bell & Co.

SINGAPORE, August 24, 1887.—Tin.—Our last report was dated 10th inst., since when Tin supplies have come in freely, and exchange having advanced, dealers have had to accept lower prices in order to effect sales. At the close there are sellers at \$37.37 1/2, buyers holding \$37.37 1/2. Exchange—Rates to London are quoted 35/ for weight. For New York the Henrietta, Transit and Naupactus are loading at 30/ @ 25/. No room is offering yet by direct steamers for Boston the berth is vacant. The steamer Devonshire took for New York, hence 811 piculs. Exchange is steady at 3/3 1/2 for six months' credits.—Giffen, Wood & Co.

PENANG, August 18, 1887.—Tin.—Fortnight's receipts amount to 11,000 piculs, and the sales to 9,000. Europeans taking 4,000 and the Chinese 5,000. Opening at \$39.12 1/2, the market gave way to \$37.65, which was paid for China, winding up at \$37.71 in consequence of the increased Chinese demand. Total shipments to Europe hence since January 1, 96,512 piculs, and to the Continent 375,000. The Percha is bringing \$50 @ \$100 picul as to quality, and India £50 is held at \$90 @ \$70 without anything doing. Exchange, four months' Bank on London, 3/3 1/2.—Schmidt, Kusterman & Co.

COLOMBO, Ceylon, August 25, 1887.—Plumbago.—A steady demand prevails at following rates in rupees: 8 ton: Large Lump, 135 @ 150; Ordinary Lump, 115 @ 135; Chis 82 @ 90, and Dust, 45 @ 55. Shipments to date, 6,542 cwt. to England; 156 to Genoa; 1705 to Hamburg; 5291 to Antwerp; 4439 to Bremen; 254 to India; 8 to Australia, and 14,823 to the United States.—Agents, 230,221, against 177,265 in 1886; 179,433 in 1887, and 200,761 in 1884. Exchange, six months, 1/5 1/2 @ 1/5 1/2.—Volkart Brothers.

SPAIN.

BILBAO, September 24, 1887.—Iron Ore.—The scarcity of steamers continues, causing a slow export movement, but it is to be supposed that soon there will be a change in this. Several sales of Ores have, nevertheless, transpired at firm rates, say 7/ @ 7/3 Campanil, and 6/7 @ 6/10 Rubios superiores. Shipments so far this year run up to 3,265,395 tons, against 2,400,970 last year. Pig Iron is moderately active for export, and a little dull coastwise.—Bilbao Maritimo y Comercial.

HOLLAND.

ROTTERDAM, September 23, 1887.—Tin.—Spot Tin is scarce, and in good demand, while futures, especially distant ones, are neglected. We quote Banca, 62.87 1/2; Billiton, spot, 62.75, and January delivery, 62.25.—Koch & Vierboom.

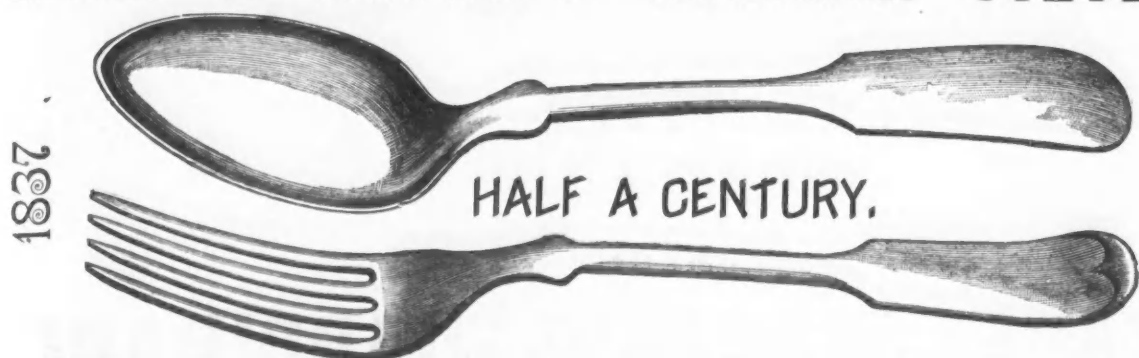
GERMANY.

HAMBURG, October 1, 1887.—Iron.—The consumptive Iron demand has continued on the increase, rather than the speculative. Pig Iron has been very active; for Silesia, in particular, but both the home and export demand has been quite lively, with an upward tendency; 10 1/2 @ 12 1/2 Manganese is bringing 50 @ 51 marks 1/2 ton. Makers of Pudding Pig meet with a brisk demand for it, the rolling mills being under heavy contracts and turning Pig all the way into the new year. A Silesian prime Forge Pig is bringing 46.50 @ 47. Foundry Pig is also doing well, the foundries reporting an increased demand on them, but it remains unsold. Both Bessemer and Thomas are in brisk demand, the latter especially so, and it has risen to 43 @ 44 marks. The rolling-mill branch seems in a flourishing condition, though Merchant is not so pressing inquired after just now. Specifications are coming in more slowly, but exchange rates are maintained, though they are no more quite as profitable since the advance in Pig. Beams are so urgently wanted that they now command 113 @ 115. Hoops remain steady. Makers of Boiler Plates have a good run of trade at 150 marks. Thin Sheets are 138 at Dortmund and 135 at Siegen. The formation of a Wire syndicate keeps the goods in this branch very firm if not buoyant. Railroad Material is fairly active; Cars are 1-ss so. Machine shops and foundries are busier without being able to establish an improvement—this so far as Rhenish-Westphalia is concerned. In Upper Silesia Pig Iron remains dull. The Steel works are fully booked, and so are the foundries. There is a good demand for finished iron. Dealers are anxious to secure contracts for forward delivery for the coming year, but makers decline naming a price. Specifications have been coming in readily, so that the fall trade will also prove better than it was last year. At Aachen in the Wire branch are glad that in Western Prussia an understanding has been arrived at; they are likely to follow the example, prices not being remunerative enough considering the advance in Pig. In August, Germany, Luxembourg included, produced 337,397 tons of Pig, 159,506 ther-of Forge and Spigot; 39,664 Bessemer; 95,736 Thomas, and 41,331 Foundry. During the first eight months the production was 2,511,833 tons, against 2,345,417 in 1886. M-tale.—Nothing has transpired in Lead. Copper remains steady.—Borrenhelle.

RUSSIA.

ST. PETERSBURG, September 30, 1887.—Petroleum.—At first the G. Verment intended to levy an internal revenue tax only on the refined article of 25 copecks the pood, equaling 18¢ American, 30¢ pounds, but now the crude product is also to be taxed to the extent of 6 copecks the pood.

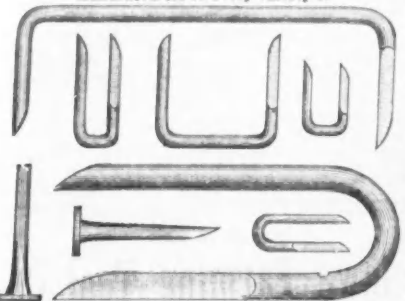
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Manufacturers of every variety of

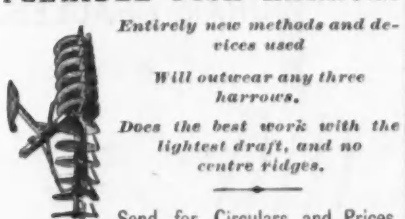


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Our STEEL CLINCH STAPLES will drive in harder wood or mortar than when made from iron. They can also be clinched as well as any soft iron staples.

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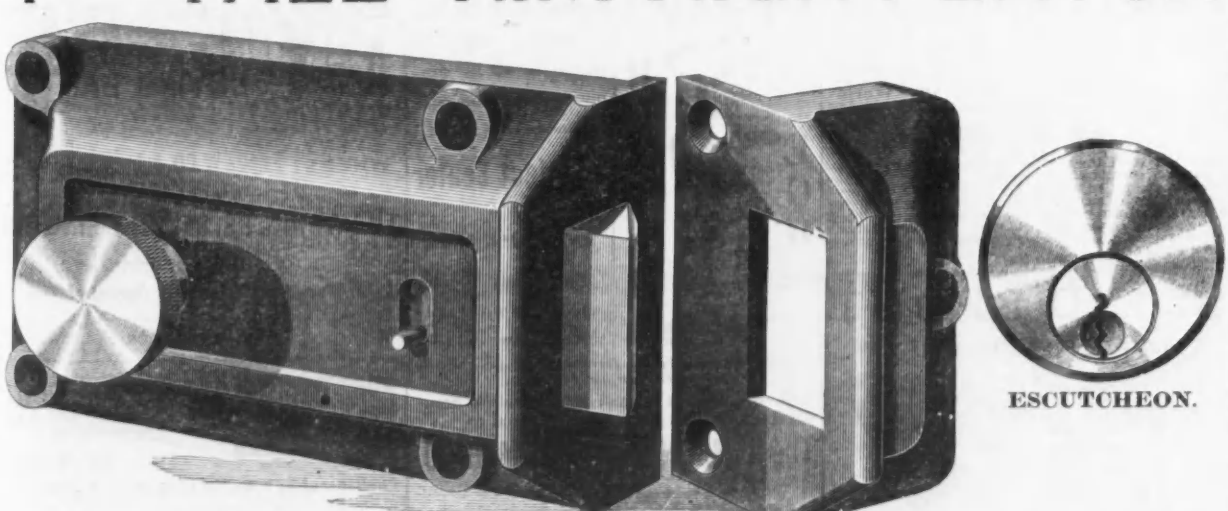
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Meanwhile Petroleum railroad freights to the Austrian frontier have been reduced on the line via Orel, Molensk, Bresee and Warsaw. The Petroleum tax will produce 6,000,000 rubles.—*Journal de St. Pétersbourg*.

FRANCE.

PARIS, October 1, 1887.—Metals.—Have been quiet and steady, with an improvement in Tin and Spelter. We quote: Copper.—Chili Bars, 104 @ 107.50; Ingots and Slabs, 109; Best Selected, 115; and Pure Corocoro Ore, 107.50. Tin.—Banca, 280; Billiton, 275.50; Straits, 274, and English, 275. Lead, 20.50 @ 31.25, and Spelter, 41.50 @ 42. Iron.—In this market the demoralization continues. A large lot of Beams is asserted to have been parted with at below 11 francs, though the quotation in the open market remains 12, and for Merchant, 13. Sheets No. 2 are, on the other hand, firmer at 15. Old Rails are barely sustained at 8 francs, all @ 100 kg. Charleville reports a brisker state of affairs, but complains of unremunerative rates. The Haute-Marne is, on the contrary, stagnant, with Coke Merchant at nominally 13 @ 13.50. At St. Dizier the market is steady; at Longwy the Steel works continue busy.—*Moniteur des Intérêts Matériels*.

BELGIUM.

BRUSSELS, October 1, 1887.—Iron.—The Belgian market remains firm. There is a good demand, and without an exception all works are well booked. Prices remain stationary, but well sustained. Machine shops and Structural Iron works complain of low prices, considering the advance in raw material; orders are also less plentiful for the moment, the great activity in building in Belgium causes Beams to be as brisk as ever, and still rising in value. Bridge builders are satisfactorily engaged; manufacturers of rolling stock less so. Steel works continue reporting favorably.—*Moniteur Industriel*.

AUSTRIA.

VIENNA, September 30, 1887.—Iron.—The fall trade is satisfactory, and exceeds in volume last year's, which to a degree is due to the fine crops in Austria-Hungary. All articles in the Iron and Steel lines usually in demand at this time of the year meet with a ready sale at well sustained rates. We quote: Pig 38 @ 46 florins @ ton; Merchant, 105 @ 125; Sheets, 140 @ 175, and Beams, 117 @ 127. Metals move satisfactorily at firm prices; we quote: Copper, 54.50 @ 55; Lead, 18.50; Spelter, 20.25; Tin, 136 @ 137; Antimony, 41, and Quicksilver, 240 florins @ 100 kg.—*Handel's Journal*.

NEW PUBLICATIONS.

THE METALLURGY OF SILVER, GOLD AND MERCURY IN THE UNITED STATES. By THOS. EGGLESTON, LL.D. In two volumes. Volume 1, Silver. John Wiley & Sons, New York, publishers. Price, \$7.50.

Dr. Eggleston, who is professor of mineralogy and metallurgy at the Columbia School of Mines, which owes its existence largely to his efforts, is well known on both sides of the Atlantic as an industrious and voluminous contributor to current technical literature. He possesses an important advantage through the constant and intimate intercourse he has with many successful metallurgists in this country, who, as the Germans put it, "once sat at his feet." This should keep him in close contact with current practice and avoid the danger into which compilers easily fall, of being unable to sift what is essential and important from minor details which are controlled by personal and local considerations. Professor Eggleston seems to have availed himself of these opportunities to some extent, but we cannot help believing that it would have been possible for him to obtain for the asking figures of cost of recent date. Whenever Professor Eggleston touches commercial questions he is led woefully astray. Thus he quotes Connellsville coke at Cheltenham at \$10 a ton on page 76, when it is nearer \$6.50. The quotations for prices of lead-silver ores for 1884 and 1885 might easily have been supplemented by figures at least a year later. No engineer would pay much attention to a statement of cost of roasting in a Bruckner cylinder at the Caribou mill in 1871, or of barrel amalgamation at the Pelican mill in 1874, or the Mettacom mill in 1869. It seems absurd to quote prices paid for silver ores in Colorado in 1874, and yet such instances abound of the use of material collected years ago. When an industry changes as rapidly as that of silver milling during the past decade, the writer of a text-book should take the trouble to freshen up his note-books.

We must confess, too, that no proper balancing in the treatment of the different parts of his subject has been carried through. Thus, while zinc desilverizing is quite fully treated, it is true, with a good many old data, cupellation is poorly handled. The majority of American students could well afford to see the lengthy chapter on the patio, cazo and other primitive methods cut down to a paragraph, and more space devoted to roasting and crushing. We do not quite understand the injection into a volume on silver metallurgy of a lengthy description of the Ball stamp, with records of work nearly 10 years old, nor the fact that when once printed equal if not more space was not given to the Leavitt stamp, a marked step in advance over the older method. It would probably have been far better to give the room thus devoted to what is thus far machinery employed exclusively in the treatment of copper ore to an account of the Boss system of continuous milling, instead of merely referring to it in a casual way.

These are some of the obvious defects of a work which will aim to take rank as one of the modern text-books on the metallurgy of silver. It is to be hoped that the memory of the student is not to be lumbered up with much of what it contains. We would have preferred to see that which is most valuable to beginners, as well as to men for years in practice, a critical discussion of the considerations underlying arrangement of plant, the elements entering into the decision of such questions as the choice of one or the other methods of treatment for particular ores, &c. We are tempted to call the mere description of appliances and processes a treatment of the elementary side of the subject. Professor Eggleston undoubtedly does justice to this, but we are sure that the profession would have been greatly indebted to him if he had gone a step further and had more clearly defined, for instance, when and where a metallurgist will do best to turn to leaching rather than to pan amalgamation. It would have been well, too, had attention been called at length to the fact that lead and copper are becoming more and more the carriers of the precious metals. In other words, "dry" ores, so called, are in many localities bought in growing quantities by the smelters of lead and of copper, and are thus withdrawn from the realm of the different methods of treating silver ores.

Professor Eggleston has done so much good work, though his scattered papers and con-

tributions to the literature of metallurgy in the United States, that we have looked forward with more than ordinary interest to the volume now issued. We may confess that, while it has come fully up to expectations in some respects, it is a disappointment in others. The book is well equipped, but the proof reading is not up to the mark.

Recent Development of Rack Railways.

From an abstract* of a paper on the above subject, by A. Kuntze, in the *Zeitschrift des Vereines Deutscher Ingenieure*, we take the following:

Prior to 1850, 10 lines had been constructed on Rignenbach's system—four of which were entirely rack lines, and six partly rack. Since that year six rack lines, two partly rack, and seven rope railways with rack rails, have been laid on the same system. In 1882, Abt's system was introduced, and four lines have been constructed in this manner, while others are in hand. The best known line on Abt's system is that from Blankenburg to Tanne. Rignenbach's rack-rail has kept its original construction with little variation, the chief modifications being in the fastenings and in the use of iron cross sleepers. The latter were adopted first on the Drachenfels line, then on the Niederwald and the Stuttgart and Degerloch lines, and on the Gaisberg (near Salzburg), and others. In the Brünn railway—a mixed line—the channel-irons are 8 1/2 inches high, so as to give sufficient clearance in the rack gearing when the engine is on the ordinary rails. In the Höllenthal line in the Black Forest, the ends of the rack teeth are not fixed in through the channel-irons; but one in every four or five is screwed through. The teeth in this line are 2 1/2 inches deep, and of corresponding width.

The failure of any one tooth in the Rignenbach rack is of no material consequence, as three teeth of the pinion-wheel are always bearing simultaneously on the rack—one fully, and the two others at one point of contact. On the Drachenfels line, one length of rail was tried, with one tooth missing, on a gradient of 1 in 10, and the train passed and repassed the place with no perceptible shock. The rack on Abt's system has the advantage over Rignenbach's in curves, as the plates can so easily be bent; but the latter system necessarily possesses greater lateral strength and stiffness. Abt's rack can be more readily adapted to any particular traffic, and is economical for light loads, as the number of plates can be reduced from three to two, and the thickness can be varied. The details of the rack and locomotive on the Harz line have already been quoted; as an instance of a lighter construction, the rack on the Lehesten and Oertelsbruch line is formed with two plates, and the engine has two coupled wheels in two parallel sections, the strain on the rack being 3.7 tons. In each case the average pressure on any tooth is 0.95 ton. A series of Abt's rack-plates, tested at the Mechanical and Technical Laboratory at Munich, gave a result of 5.23 tons as the limiting pressure for one tooth. In Rignenbach's rack, the mean pressure on one tooth is between 3 and 4 tons, and maximum pressure about 7 tons; and on the Gaisberg line, where the larger wheels and two-coupled driving-wheels are employed, the pressure is 10 tons. Rignenbach's pinion-wheel has 33 teeth with 4 inches pitch, and Abt's has 15 teeth with 4 1/2 inches pitch; so that for every time one of the first comes into play the latter is used $\frac{33}{15} \times \frac{10}{120} = 1.8$ times.

The present cost of the Rignenbach rack, complete in situ, is about \$4.55 per lineal yard.

The August issue of the report of the Bureau of Statistics shows the imports of iron and steel for the past eight months to have been as follows:

Imports of Iron and Steel Eight Months.		
	Gross tons.	Gross tons.
	1887.	1886.
Iron Ore.....	860,102	715,667
Pig Iron.....	323,320	262,967
Scrap Iron.....	239,616	49,812
Scrap Steel.....	23,041	3,760
Bar Iron.....	82,801	14,222
Steel Rails.....	10,642	8,408
Steel Hoops, Bands, Sheets and Plates.....	17,498	2,372
Steel Ingots, Blooms, Billets, Slabs, Bars.....	235,274	64,975
Sheet, Plate and Taggers Iron.....	3,726	2,887
Tin Plates.....	192,394	190,433
Wire Rods.....	108,096	96,580
Anvils.....	911	255
Chains.....	515	364

The imports into New York for the month of September and the first nine months of 1887 have been as follows, as compiled by the Metal Exchange, the unit being the gross ton:

Imports into New York.			
	Eight mos.	September.	Nine mos.
Iron Ore.....	28,163	6,863	35,026
Pig Iron.....	96,684	11,447	108,131
Spiegel Eisen.....	74,959	16,564	91,523
Old Rails.....	102,808	12,433	115,241
Scrap Iron.....	15,960	662	16,622
Scrap Steel.....	15,251	1,001	16,252
Steel Blooms and Billets.....	56,718	9,119	65,837
Steel Rails.....	2,409	50	2,459
Wire and Nail Rods.....	72,157	9,590	81,747
Iron Bars.....	9,277	1,197	10,474
Steel Bars.....	7,267	567	7,834
Iron Beams.....	1,520	222	1,742
Sheet Iron.....	1,262	963	2,225
Steel Sh's and Plates.....	6,887	1,032	7,919
Tin.....	7,459	1,588	8,995
Tin Plates.....	1,298,647	181,496	1,479,142
Taggers Iron.....	7,963	1,225	9,188

Plans have been agreed upon at Chicago for the new Madison street bridge, which is to be a two-arm, double-roadway, steel, center swinging bridge, the center pier being at the west side of the river and the bridge swinging clear over the railroads now spanned by the viaduct. The bridge is to be 310 feet long, 90 feet wide, and will cost \$200,000, to say nothing of the land damages.

* Excerpt Minutes of the Proceedings of the British Institution of Civil Engineers.

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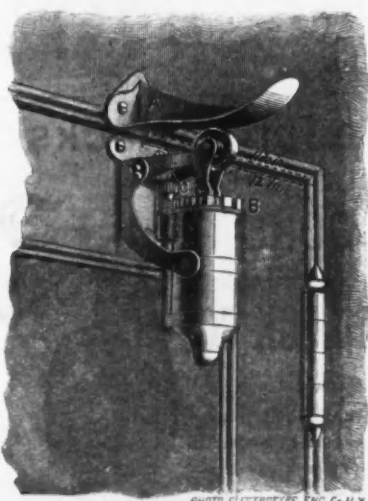
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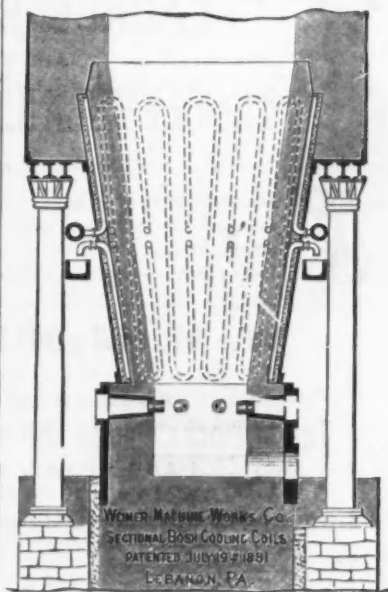
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Workmen's Insurance in Germany.

During the past decade, since labor leaders acquired some recognition as a power in politics, there has been a good deal of legislation looking toward the compensation of workmen for injury received during work. At an early date the public authorities were justly appealed to to frame regulations for the safety of workmen in such a hazardous calling as that of the coal miner. The occurrence of fearful catastrophes attending the explosion of fire-damp naturally enlisted public sympathy in such a movement. The disadvantages under which individuals must naturally labor in a contest for compensation for injuries sustained easily led to legislation like the Employers' Liability act in Great Britain. The latter and the regulations for underground workings have been lately modified, but they are far from having approached the scope of the legislation upon which Germany embarked some years since and which it is about to carry still further. The motives which led the Government to initiate past measures and impelled it to propose further legislation need not be discussed. The plan is comprehensive, and, aside from its general interest, has some bearing upon the position of German manufacturers in the world's markets.

On the 15th of June, 1883, a law was passed providing for compulsory relief in sickness to workmen, without any reference whatever to whether or not it was directly or indirectly traceable to their occupation. Only those cases in which it is the immediate fault of the sufferer are excepted. He receives free medical treatment and drugs and half the amount of his usual earnings. The cost is distributed between the workmen's sick fund and the employer, the former contributing two-thirds and the latter one-third. This relief is only granted for a period of 13 weeks, however. After that time payments are made under another law in all cases in which an accident during work was the cause of the sickness. This law is supplemented by those relating to accident insurance, which was passed on the 6th of July, 1884, and was amended

by a series of later acts, going into effect on the 1st of October, 1885. So far as possible men occupied in manufacturing or mills producing the same or similar goods are classed together, their employers forming an accident association. The object obviously is to make parties to the same contract those whose work involves at least approximately identical risks. Practically the employers form a mutual insurance association for the benefit of their workmen, paying for its administration, formulating rules for the safety of their men, although the Government itself has an independent elaborate system of factory inspection. In cases of dispute the demand for compensation for injury sustained goes to a board of arbitration, from which there is an appeal to the Imperial Insurance Bureau. The payments to men injured amount to two-thirds of the wages earned at the time of the accident. If it results fatally, 20 per cent. of the rate of wages received by the deceased is paid the widow, and 15 per cent. for each child. If the deceased was a widower, each child is entitled up to a certain age to an annuity of 20 per cent. of its father's wages at the time of his death, the aggregate payments thus made to his family not to exceed 60 per cent. of his earnings, however. When a man has been partially disabled by accident when at work part payments are made. This, roughly, is the idea underlying the whole system, which has been admirably worked out in detail, considering the fact that the legislators and the Government had no precedents whatever to guide them.

Some idea of the magnitude of the payments may be obtained from the report recently issued by the association covering the iron manufacturers of the Rhenish Provinces and Westphalia for the period from October 1 to December 30, 1886. This association embraces 255 works, with 70,313 persons insured. The number of accidents was 329, of which 271 led to injury and 58 to death, leaving 37 widows and 77 children to be provided for. The cost of burial and hospital treatment amounted to 13,487.67 marks, to which must be added compensation amounting to 53,631.67 marks—a total of 67,118.98 marks. Under the law three times the amount must be added to a reserve fund, or 201,356.94 marks. The costs of administration were 43,753.20 marks for 1885 and 1886, and 41,729.36 marks were paid in to meet similar expenses of 1887. This carried the total outlay to 353,958.48 marks. Taking the period from October 1, 1885, to the end of 1886, the cost of the accident insurance, including payments to reserve fund, was 312,229.12 marks. As the wages paid during that period footed up to 83,841,224.71 marks, the outlay for insurance per \$100 paid in wages for 15 months was 37 cents. This, it may be conceded, is no heavy sum, but it must be considered that the occupation is not what might be termed hazardous, and that the payments for the relief of widows and children are to some extent cumulative.

The latest phase of the movement which has resulted in the passage of the laws alluded to is the proposal to provide for the old age of workmen by invalid funds, to which the Government is to contribute one-third, the workmen one-third and the employers the balance. An article which is believed to voice the views of the Government estimated that the period of dependence upon this fund would be reached at the age of 65 or 70 years, and that, placing the annuity at 120 marks, the total outlay for the whole Empire would be 66,000,000 marks or \$16,000,000. It is not a matter for surprise that such an estimate is rejected as probably far below the actual requirements by those who are to be called upon to bear one-third of the burden.

In the last quarterly report of the Bureau of Statistics a puzzling table is published professing to give the average prices of merchandise imported into the United States for the 10 years from 1878 to 1887. As we understand the matter, these figures are the averages of the values in the foreign markets from which the goods are imported. Before the passage of the act of March 3, 1883, they included the cost of transportation from the point of production to the vessel in which the shipment was made to this country, and costs, commissions and package, provisions which were repealed by that act. The result is that all averages prior to the fiscal year 1884 were from 5 to 7 per cent. higher. We shall therefore confine ourselves to the years following that time, compiling the table given below:

Average Prices of Imported Iron and Steel—Fiscal Years.

Articles.	Unit of quan.	1884	1885	1886	1887.
Iron ore.....	Ton	\$2.379	\$2.359	\$1.962	\$1.855
Pig iron.....	"	17.419	17.698	15.502	15.880
Scrap iron.....	"	14.043	12.203	12.387	14.322
Scrap steel.....	"	17.734	16.724	12.971	13.434
Steel rails.....	"	31.785	24.903	26.209	19.816
Bar iron.....	Pound	2.08	2.06	1.96	1.96
Cotton ties.....	"	1.56	1.56	1.56	1.56
Hoop, band and scroll iron.....	"	2.06	3.06	1.26	1.46
Steel h's, b'nds, strips, sheets and plates.....	"	4.36	4.16	2.56	1.66
Ingot, blooms, billets, slabs and bars.....	"	2.96	2.46	3.16	0.96
Sheet, plate and tangers iron.....	"	3.76	4.36	4.36	3.66
Tin plates.....	"	3.66	3.86	3.16	3.06
Wire rods.....	"	1.76	1.56	1.36	1.36

The trade will be much surprised to note the almost general downward tendency of prices at a time when we know that values were advancing abroad. This is particularly true of the fiscal years 1886 and 1887. We may acknowledge that some explanations might be furnished in some cases. Thus,

for pig iron, the importation of a larger percentage of Bessemer and a lower percentage of spiegeleisen might mask an advance. In ores a lower grade, or heavier shipments from nearer deposits, might cause an apparent decline in the face of an actual advance. In bar iron heavier shipments of common, and an unchanged or declining movement in such an article as Swedish bar might have a similar effect. In steel ingots, blooms and bars the heavy increase in the receipts of the cruder forms would naturally drag down the average, yet it seems difficult to believe that 0.9 cent or \$20.16 per ton can represent a fair average when a good deal of the goods is worth five times that sum at foreign works. It is a curious fact that the decline in average prices seems to affect as much those articles on which the duties are specific as it does those upon which our duties are ad valorem.

All-Rail Shipments of Lake Ores.

Until two years ago all iron ore shipped from the Lake Superior mines was carried by water for part of the distance to its destination. The ore was taken from the mines by rail to near-by lake ports, to be transferred to vessels and afterward reloaded on cars at lower lake port nearest the location of the furnaces using it. The carriage by water was a necessity of the situation, and in some respects it has been advantageous to the development of the mines, as water transportation is usually much cheaper than land carriage, and besides the building of railroads to connect the mines with the railroad system of the country was an expensive undertaking and has been of slow growth. The lakes have formed such a useful channel for the iron-ore trade that for many years the conditions of the trade have been rigidly governed by the peculiarities of lake navigation, chief among which is the necessity of forwarding a year's supply of ore in seven months, navigation being suspended by ice for the other five. Expensive arrangements for quickly loading and unloading vessels were constructed at the upper and lower lake ports respectively, which compelled the imposition of charges on hauling the ore sufficient to cover the interest on the money thus invested in appliances for handling it. Later the location of new iron works has in some instances been partly settled by the obvious advantage to be gained from proximity to the lakes, in order to save the inland freight on ore from a lower lake port.

About two years since the Chicago and Northwestern Railroad tried the experiment of hauling iron ore directly from the mines to furnaces in the vicinity of Chicago. The small cars, holding less than 10 tons, which are used between the mines and the docks were tried for this purpose. It was found by the railroad company that the idea was practicable, that the ore could be delivered at a rate satisfactory to consumers, and that, especially for winter delivery, there were a number of advantages derived by their patrons which made it seem desirable to maintain the all rail service. On the other hand, in severe weather the wet ore froze so solidly in the cars that it was difficult to unload them, as they were not built to meet such a contingency. The same trouble from freezing was experienced at the mines when loading from stock piles. Recently, however, 25-ton cars have been constructed so as to be easily emptied. In them ore can be carried at a less cost than in the small cars, which is another important consideration.

The passage of time and the continued development of the resources of the Northwest have brought forward other candidates for the transportation business of that section, and now there are three lines of railroad extending all the way from the Lake Superior mines to Chicago. These are the Chicago and Northwestern, the Chicago, Milwaukee and St. Paul (in connection with the Milwaukee and Northern) and the Wisconsin Central. The Milwaukee, Lake Shore and Western, in addition, extends from the mines to Milwaukee, whence connection is made by other railroads to Chicago. Other companies are, or soon will be, able to compete for this business through combinations which are practicable. The rate for hauling ore the entire distance has been hitherto about \$2.25 per gross ton, but this depends on circumstances. Lake freights have something to do with it undoubtedly. They have been unusually high this season, owing to the great demand for vessels. If they fall it is very probable that the all-rail rate will decline also. Indeed, so high has the vessel rate ruled during the past summer that those interested in the iron-ore trade assert that at times ore could have been hauled by rail all the way from the mines to the Mahoning Valley, via Chicago, at a lower price for transportation than by lake and rail, via Cleveland, if the railroads had been prepared to handle the business. If a satisfactory rate can be secured from the railroad companies it is reasonably certain that a number of Lake Superior mines will ship ore to Northern Ohio furnaces during the coming winter. Negotiations are now being made for such deliveries.

Chicago consumers of iron ore do not all view this matter in the same light. Those owning works situated so near the lake that their ore vessels are not interfered with by river drawbridges, and having built very complete unloading apparatus specially designed for the lake trade, are not so san-

guine over the advantages of delivery by rail as are the owners of other works which are situated differently. The latter are strongly disposed to welcome a change in the system of ore transportation. They would be glad to secure a constant supply of ore extending throughout the whole year, rather than to anticipate their winter needs in the summer and pile up huge stacks in their yards months before it will be required. A great deal of capital is tied up in this way by a large establishment, and the interest on such an investment is a burden in times of close margins on manufactured products.

It is true that the railroad companies themselves hardly expect to revolutionize the ore-carrying trade at an early day, or they would not continue to invest money in constructing ore pockets for loading vessels at ports near the mines. But in this the railroad companies are simply accepting present conditions of trade, and conforming to them. In fact, it is quite possible that the future of the Lake Superior iron-ore trade may require not only increased vessel facilities, but the all-rail routes will be imperatively needed to assist in meeting the demand for transportation. A depression in the iron trade will, of course, affect the demand for Lake Superior ore, and during that time existing facilities for transportation may be more than ample, but a subsequent revival in trade will, as before, bring with it an increased demand for Lake Superior ore, when greater transportation facilities must be provided. At such a time the all-rail routes will be prepared to handle a very considerable part of the trade, and may prevent the rise in freights which has usually formed an important part of the vesselmen's programme on such occasions. A proper management of this business now by the railroad companies will undoubtedly be of great advantage in the future. The chief point for them to consider is the rate which they will charge. If this is made reasonable, and not put so high as to offset all the advantages of rail delivery, the interests of all concerned will be promoted and a beneficial influence will be injected into the ore-carrying business that will be felt throughout the Western iron trade.

The Parliamentary Committee on Gold and Silver.

On September 20, last year, the British Government, at the instigation of many members of Parliament, resolved upon the formation of a committee of investigation on the relations of value between gold and silver. The committee met twenty-three times and heard the opinions of twenty experts on the subject. Their report has been printed, covering 364 pages, and from it we shall make extracts from only three reports, because we consider them of special interest.

Prof. Roberts Austen, Chemist and Warden of the Mint, submitted a memorandum on the average cost of silver production. The world's silver production in 1883, the only year for which he was able to procure reliable data, is given by him as follows:

	Ounces.
United States.....	35,737,908
Mexico.....	22,672,732
Germany.....	7,417,642
Austria.....	1,568,562
Spain.....	2,395,481
Argentina Republic.....	325,045
Colombia.....	857,873
Bolivia.....	12,375,000
Chile.....	4,119,125
Other countries.....	963,505
Total.....	88,854,738

Representing 2,748,000 kg. The silver was obtained as follows:

	Ounces.	Average cost of production per ounce.
1. From gold.....	508,000	25¢
2. From lead ores.....	80,735,000	24¢
3. From copper ores.....	7,200,000	23¢
4. From silver ores.....	49,920,738	17¢
Total.....	88,854,738	20¢

Silver brought in the London market in 1883 50½ pence on the average, or 2½ times Mr. Austen's estimate of cost of production. The large yield of silver lead will be noticed. British India has at all times been a mysterious country, and, as it affects the gold and silver question more than any other, the light thrown on it by two prominent Indian financial officers is of special interest. Mr. D. M. Barbour, of the Indian Department of Finance, where he has held a position for the past 20 years, dwells particularly on the hoarding of the precious metals practiced by the natives from time immemorial. Recently even more has been worked up into jewelry, which amounts to the same thing. Nearly all the gold imported into India since 1835, aggregating £130,000,000, together with previous importations, has been hoarded. A good deal of silver, partially coined, has also been hoarded, presumably as much in amount as the gold alluded to, Mr. Barbour thinks. Nothing short of a famine brings a portion of the precious metals thus retained into circulation again. Then the natives take the precious metals to the mints. Nor has the opportunity afforded the natives to lend money out on interest diminished their hoarding propensities much. A good deal of the hidden treasure may have been lost, but this is a mere supposition. Between 1861 and 1886 no less than £6,640,000 worth of silver coin is shown to have been shipped to Simla alone, and nearly all of it has remained in cash in the possession of the mountain population of that locality. Latterly, it is true, hoarding has

been observed to decrease somewhat. Still, this deeply rooted habit is adhered to by the bulk of the people, and it is probable that it will continue for a long time to come. Quite recently the decline in silver may have caused a preference to be given gold for hoarding or ornamental purposes, but not much importance need be given to this diversion. It would be different if the double standard were to be adopted in India, for in such an event the hiding away of gold would augment, since it serves better as a reserve. The cost of the necessities of life—of food in particular—is not higher than it has averaged in former years. Wages have increased in the large cities, in localities within reach of railroads or in such places where large factories have been erected, and finally for skilled labor. Under other circumstances they seem to have undergone little change since 1870.

The Financial Secretary for India, Mr. H. Waterfield, stated that the difficulties arising for the Indian Government from the depreciation of silver are to be looked for in the many firm engagements that have to be settled for in gold in England, while the Indian revenue is collected in silver coin. The largest item of income is derived from the land tax, fixed for all time to come for the large province of Bengal, while in the remaining provinces the same can only be partially raised after the lapse of long intervals. The revenue, formerly so considerable, which came from the sale of opium has materially decreased of late, in consequence of certain changes made by China in levying duty on opium imported from India, in accordance with recent treaty stipulations agreed to by Great Britain, and the impulse given in China to the cultivation of the opium poppy. This source of revenue is by no means looked upon as reliable in the future. To raise the salt tax is not deemed advisable. Nor is it believed likely that there is going to be much of an increase of income from any of the remaining sources of revenue in the near future. Under these circumstances the continued drooping tendency, baffling all calculation, of Indian exchange—that is, the value of silver rupees as measured by sterling money—closely following the decline in silver, is a subject of constant anxiety, and a source of the greatest difficulties with which the finances of India have to grapple. During the fiscal year 1874-75 the average exchange ruled 22½ pence the rupee; in 1885-86 it had depreciated to 18¼ pence. Each decline of a penny causes a shortage of £1,000,000 or 10,000,000 rupees in the budget. Apart from the silver decline there is the complete insecurity of the future exchange, an evil quite as great.

As for the actual amount of silver that may have to be shipped to India, it chiefly depends on the simultaneous offers of council bills and telegraphic transfers. All things being equal, business men, of course, give preference to the latter. But whenever the price of silver declines to a point in London at which less merchandise can be bought for it than in India, there is a silver drain, temporarily, from London to the latter, independently of the council bills, the exchange of which is thereby depressed. The decline in silver and the Indian exchange does not of itself necessarily determine an increased silver exportation to India. This was demonstrated last year at a time when silver declined 3 pence in London and the Indian exchange correspondingly, yet in spite of it the silver shipments from Europe to India fell off £2,160,000, as compared with 1885.

With reference to increased wheat shipments from India to Europe, Mr. Waterfield takes some pains to comment on the theories of both M. de Laveleye, the Belgian bi-metalist, and the American Secretary of the Treasury. He winds up by saying that the competition which Indian wheat is able to make is chiefly due, in the first place, to the reduction in railroad freights in India, and in the second place to the decline of 50 per cent. in ocean freights since 1870. He remarks that the decline in silver is not the cause of such competition, but the lower Indian exchange. He adds that it has to be admitted that the repeated assertion that the decline in silver has been favorable to India by increasing its export and restricting its import, to the detriment of European manufacturers, is true in so far as at first when the decline commenced such influence was to a moderate degree perceptible, but it had no durable effect. Between the years 1874-75 and 1885-86 the value of merchandise imported into India increased 54 per cent., while the increase in the export of merchandise was only 49 per cent. The purchasing power of silver in India has since 1873 practically remained the same, to the great advantage of the development of Indian industries.

There are a good many more interesting details in Mr. Waterfield's report, but we shall content ourselves with the above extract, which suffices to show the complicated nature of the silver problem in the East. Fortunately for British India its natural resources are so immense and varied, and its country population so laborious, while numbering at least 200,000,000, that the monetary calamity of being saddled with the silver standard does not cause the least inconvenience to the people at large; nay, it seems to have been a blessing in disguise in some important effects it has had, as Mr. Waterfield shows. The only people not to be envied are the managers of the finances of India, and they have at least the consolation of drawing big salaries for the perplexities they are troubled with.

The Condition of the Blast Furnaces of the United States, October 1.

During September the product of the blast furnaces of the United States increased considerably, both so far as anthracite and coke plants are concerned. While the former have not reached the high figures of the summer, we seem likely to do so in the near future; the latter are now turning out iron at a heavier rate than ever before. The effect of the coke strike is now practically over, and in addition to general activity in Western Pennsylvania, Ohio, Illinois, Wisconsin, West Virginia and the South, some new plants, like those of the Troy Steel and Iron Company, and a number of remodelled furnaces, like the Jupiter, the Belmont and others, are producing. The total output is enormous, and yet there come to us from all quarters reports of moderate or exceptionally low stocks. So far as we can learn from present indications this great rate in the make is likely to continue at least in the near future.

The status of the anthracite furnaces at the beginning of the month was as follows:

Anthracite Furnaces in Blast, October 1.

Location of furnaces.	Total number of stacks.	Number of furnaces in blast.	Capacity per week.	Number of furnaces out of blast.	Capacity per week.
New York.....	20	14	4,038	15	3,801
New Jersey.....	15	15	1,944	10	2,998
Pennsylvania.....	3	2	137	1	105
Lehigh Valley.....	48	38	12,384	10	2,972
Spielgel.....	1	0	0	1	40
Schuylkill Valley.....	40	23	7,081	17	2,738
L. Susquehanna Val.	24	18	5,765	6	1,310
Lebanon Valley.....	15	12	5,072	3	720
U. Susquehanna Val.	18	10	2,788	8	1,370
Maryland.....	4	1	290	3	455
Total.....	197	123	39,440	74	16,554

Furnaces in blast.

	Capacity per week.
October 1.....	123
September 1.....	125
August 1.....	123
July 1.....	123
June 1.....	123
May 1.....	123
April 1.....	123
March 1.....	123
February 1.....	123
January 1.....	123
December 1.....	123
November 1.....	123
October 1.....	123
September 1.....	123
August 1.....	123
July 1.....	123
June 1.....	123
May 1.....	123

In New York No. 1 Onondaga went out on the 1st inst. In New Jersey the product has been light, not reaching 8000 gross tons, only five furnaces and two spiegel furnaces being running. Chester, however, has blown in since the beginning of the month. Pequest, we may note, was working the greater part of the month on non-Bessemer pig. The Passaic spiegel furnace has completed relining, and when this reaches our readers is probably again producing. In the Lehigh Valley one of the Crane furnaces is out, but otherwise no important changes have taken place until now, so far as the number of furnaces in blast is concerned. We are informed on good authority, however, that some of the stacks have been working very poorly of late, on account of changes in the character of the fuel used—a result of the strike in the Lehigh anthracite coal district. It is possible even that at an early date the banking of some of the plants so affected may be decided upon. In the Schuylkill Valley Swede has gone out of blast. There is nothing of interest from the Lower Susquehanna district, while in the Lebanon Valley the most significant event during September was the blowing in of the second Colebrook furnace. In the Upper Susquehanna Valley one of the Duncannon furnaces resumed on the 29th ult.

On the 1st of the current month the status of the bituminous and coke furnaces was as follows:

Bituminous and Coke Furnaces in Blast, October 1.

Location of furnaces.	Total number of stacks.	Number of furnaces in blast.	Capacity per week.	Number of furnaces out of blast.	Capacity per week.
New York.....	3	2	1,560	1	750
Pennsylvania.....	19	18	18,850	1	400
Pittsburgh district.....	1	1	1,450	0	0
Spielgel.....	18	16	9,508	2	988
Shenango Valley.....	22	13	6,089	9	2,310
Junata & Conemaugh.....	1	1	210	0	0
Spielgel.....	2	2	1,148	0	715
Miscellaneous.....	2	2	1,185	1	120
Maryland.....	2	2	0	0	340
Virginia.....	11	6	2,996	5	2,400
West Virginia.....	6	4	2,281	2	370
Kentucky.....	3	2	590	1	280
Ohio.....	15	12	8,129	3	1,640
Mahoning Valley.....	15	7	1,949	8	1,076
Hocking Valley.....	13	11	2,553	2	420
Hanging Rock.....	16	13	8,566	3	1,010
Miscellaneous.....	16	12	12,414	4	1,790
Illinois.....	8	4	2,098	4	1,750
Wisconsin.....	3	3	1,504	0	0
Indiana.....	1	1	195	1	140
Michigan.....	1	0	0	1	280
Alabama.....	12	10	3,562	2	851
Tennessee.....	9	8	3,416	0	0
Georgia.....	2	1	539	1	242
Colorado.....	1	1	495	0	0
Total.....	227	152	89,128	55	16,112

As compared with previous months these figures stand:

	No. of furnaces.	Capacity per week.
October 1.....	152	89,128
September 1.....	145	88,194
August 1.....	145	88,061
July 1.....	145	87,319
June 1.....	98	44,965
May 1.....	148	83,509

April 1.....	148	81,795
March 1.....	146	79,682
February 1.....	145	79,257
January 1, 1887.....	137	73,422
December 1, 1886.....	139	73,735
November 1.....	140	73,013
October 1.....	136	70,802
September 1.....	135	69,206
August 1.....	133	68,852
July 1.....	132	71,316
June 1.....	122	70,726
May 1.....	129	67,888

In the Pittsburgh district there is nothing new to report, all but one of the Schoenberger furnaces being active. The stack named is being prepared and will be ready before the close of the year. In the Shenango Valley the Henderson went in on the 10th ult., but, on the other hand, one of the Stewart furnaces went out. In the Juniata and Conemaugh valleys the same number of furnaces were blowing, but the output was heavier, chiefly because of the increasing make of the plant of the Cambria Iron Company. The second Powelton furnace has since begun work. In the Youghiogheny Valley Dunbar made a good month's work in September, and Fairchance is coming up to capacity after rebuilding.

In the Hanging Rock region Eliza has gone in, and Ironton, which was banked until the 26th ult., resumed work. In the Hocking Valley one of the Fannie furnaces had just started at the close of last month. In the Mahoning Valley the only change of any consequence is that Phoenix is repairing. The aggregate output of the district has been heavy, Anna, Briar Hill, Himrod, Grace, Haselton, Mary and the two Hubbard furnaces particularly showing good records. Among the other furnaces in Ohio the three furnaces of the Cleveland Rolling Mill Company made a good record, and large figures are reported also from the Steubenville, Zanesville, Emma and Bellaire. All of the Illinois furnaces show a heavy make, the official returns from every one of the 12 aggregating 53,202 gross tons. Among those on the active list in the State, the only one not running on the first of the month was one of the four Union. In Missouri the Western Steel Company have one of their plant of three running, and are working, too, the leased Jupiter, the latter now making a large output. In Wisconsin there have been no changes.

In Virginia Lynchburg furnace blew in on the 14th ult., and is reported to be doing well. With the exception of the Low Moor, the other Virginia furnaces did not quite reach the product of the preceding month, the aggregate make being 12,215 gross tons. In West Virginia the Belmont, Riverside and Top Mill furnaces did well in September. In Kentucky only Ashland and Norton are running. In Alabama one of the Woodward furnaces was out of blast on the 1st of this month, and one of the two Alice has stopped running. In Tennessee every furnace is at work, the second South Pittsburgh falling into line on the 25th ult. The September output was 12,649 tons. In Georgia the Cherokee ceased producing on the 15th ult.

Below is the status of the charcoal furnaces on the 1st of October:

Charcoal Furnaces in Blast, October 1.

Location of furnaces.	Total number of stacks.	Number of furnaces in blast.	Capacity per week.	Number of furnaces out of blast.	Capacity per week.
New England.....	14	5	373	9	612
New York.....	10	2	638	7	585
Pennsylvania.....	23	12	407	11	689
Maryland.....	13	4	423	9	530
Virginia.....	24	6	270	18	720
West Virginia.....	3	0	0	3	165
Ohio.....	17	10	975	7	285
Kentucky.....	2	2	213	0	0
North Carolina.....	2	1	92	1	80
Tennessee.....	9	5	931	4	208
Georgia.....	2	0	0	2	114
Alabama.....	9	9	2,195	0	0
Michigan.....	24	14	3,828	10	2,540
Minnesota.....	1	0	0	1	230
Missouri.....	4	2	551	2	443
Wisconsin.....	11	4	976	7	914
Texas.....	2	0	0	2	330
California.....	1	0	0	1	345
Washington Ter'y.....	1	1	175	0	0
Oregon.....	1	0	0	1	100
Total Oct. 1.....	173	71	12,118	102	8,815
Total Sept. 1.....	175	67	11,505	108	9,619

In New England Katahdin furnace has gone out of blast, to be enlarged to 11 x 50 feet. Only one Richmond is blowing, and Kent furnace is temporarily idle. In Pennsylvania Eagle, Hecla, Greenwood, Isabella and Pine Grove were reported in blast on the 1st inst., while in Maryland, Laurel, Muirkirk and one Maryland and one Stickney were in operation, with a September output of 1387 gross tons. In the South there is little to report. Both Ironton and Jennifer did not make their usual product in September, the former being out two weeks. They are now, however, both running well. In Michigan a second Antrim furnace is building. Gogebic furnace was to blow in on the 1st of this month.

To the copper trade one of the most interesting documents issued for some time is the annual report of the Tamarack Mining Company, the concern who were plucky enough to sink 2500 feet through barren rock to strike the famous Calumet and Hecla conglomerate vein. The total expenses to date aggregate \$1,365,442.19, of which \$300,000 were for real estate, \$346,820.42 were construction expense to July 1, 1887, and \$688,621.77 were outlays for running expenses up to the same date. During its short life the mine has produced 6,237,719 pounds of ingot copper, sold for \$674,747.95, its other receipts being \$650,000 for 50,000

shares of stock issued at \$13, and \$35,000 for 350 shares of Hancock and Calumet Railroad stock. For this the company are able to show a mine rapidly being developed, equipped with excellent machinery, with a second shaft now sinking, down to 750 feet, and a stamp mill, with two Ball stamps capable of handling 400 tons of rock daily, built at a cost of over \$100,000. This mill began crushing in May, and with the mine rapidly being opened the company may be soon expected to produce with regularity at least 800,000 pounds of ingot per month. They have even under present circumstances produced 750,000 pounds in September. It is evident, therefore, that the Tamarack has become a factor of no mean importance in the copper trade. But their report will be studied closely from another point of view. The Calumet and Hecla Company have always stood alone among the mining companies on Lake Superior in their refusal to publish a detailed report of their operations. In many respects their work differed so much from that of other mines that only a rough guess could be made of their cost of producing ingot copper. The Tamarack, on the same lode, mines rock as hard under conditions which, to say the least, are somewhat more onerous. The yield of the ore broken by the Tamarack was only 2.56 per cent. of ingot in 1886-87, while that of the Calumet and Hecla is close to 4.25 per cent. The former in the fiscal year just closed produced 4,636,521 pounds of ingot copper; the latter made over ten times that amount. Now, using a leased mill, extracting ore from a single shaft, in which rock broken in exploitation work had to be simultaneously handled, the Tamarack brought its cost at the mine of refined copper down to 6.49 cents, and, adding the cost of smelting, freight, commissions and general expenses, was able to close the year with a total cost per pound of copper delivered of 8.21 cents. There is little room to doubt that further lowering will be easily possible. The inference is natural that the great neighbor of the Tamarack should be able to place its product on the market at notably lower figures. So far as cost of production is concerned, there is, therefore, little danger to these great mines.

Classification for Duty of Iron and Steel Rods.

(From our Washington Correspondent.)

Assistant-Secretary Maynard has completed his investigation of the question of classification for duty of iron and steel rods. In June last the Assistant-Secretary gave a hearing to representatives of the manufacturers of these rods, the importations of which have reached an unprecedented figure in this branch of manufacture. The provisions of the tariff fixing the duty on iron or steel rivet, screw, nail and fence-wire rods, round, in coils and loops, not lighter than No. 5 wire gauge, valued at 3 1/2 cents or less per pound, at 5 cents a pound was approved. Their complaint applied to sizes of wire rods lighter than No. 5 wire gauge, and requested a classification of these rods as wire, which they resemble, instead of classifying the small sizes as steel not specially enumerated or provided for, dutiable at 45 per cent. The duty on wire rods not lighter than No. 5 was specifically fixed at sixteenth of a pound English, or about \$13.44, while the classification of smaller sizes at 45 per cent. at invoice rates was far below.

The importers and home manufacturers were also given a hearing in favor of the non-enumerated 45 per cent. rate. A number of papers from both sides were filed, and have been examined by the Assistant-Secretary. It will be several days before Secretary Fairchild will complete his examination of the papers. It is understood to present a very exhaustive review of the whole principle involved in the interpretation of the "not otherwise provided for" clause. The well-established conservatism of Assistant-Secretary Maynard on tariff matters would suggest a decision favorable to the largest interests involved on the side of home manufacturers. The curious feature of this question is that the home manufacturers differ among themselves, the rod manufacturers claiming the higher rate and the wire manufacturers the lower. The desire to do justice to the greater share of home interests has been the perplexing feature of the investigation and conclusions reached.

The Union Steel Company, of Chicago, last week surpassed all previous records for 24 hours' production of steel rails. During the night turn, ending at 6 o'clock on Wednesday morning, 1902 rails were rolled, and the day turn on Wednesday followed with 1891 rails, making a total for these two turns of 3793 rails, weighing 1016 gross tons. This was at the rate of about eight rails in three minutes. More rapid rolling than this has been done by the same mill not long since, when 204 rails were rolled in one hour, but they were of light section and the tonnage for the turn fell short of the production referred to above. The Union Steel Company have only two converters, and roll only their own steel.

The Valley Virginian for September 15 gives the following account of the excellent work done at the Low Moor furnaces, in Allegheny County, Virginia, under the management of Mr. James Skelding, who has been superintendent of the furnace plant since 1881. The last blast of Furnace A, which began on the 17th of November, 1884, and ended on the 27th of May, 1887, was the most extraordinary, quality of iron considered, ever made in the South. The total time of the run, after allowing for stoppages for various causes, was about 2303 months, and the total output in tons of 200 pounds was 105,658 tons 1300 pounds. This

reduced to net tons of 2000 pounds makes the output of this blast 121,507 tons, 90 per cent. of which was foundry iron. To produce this required 269,606 tons of ore, 151,139 tons of coke, 129,565 tons of limestone, or a total of 550,310 net tons of material used. The iron ore is procured 1/2 mile from the company's mines, 2 miles from the furnace, and the other half from mines within a radius of five miles. The two classes of ore are mixed, and yield an average of about 43 per cent. of metallic iron. The ground for the erection of the new furnace, B, was broken in November last, and on the 25th of July it was put in blast. The first 27 days of B's blast ran up to 2345 tons, an average of over 100 tons per day. Arrangements are now maturing to commence the remodeling of A, with a view to the operation of the two furnaces and a consequent doubling of the capacity of the works. This will involve a duplication of the three 500 horse-power engines now in use, and a number of other extensive and costly improvements."

Cast-Iron Versus Wrought-Iron Radiators.

In a series of articles on radiators Mr. John J. Hogan gives the result of a test made with a wrought iron tube radiator and a cast-iron radiator of the Bundy pattern. Each radiator was rated commercially or nominally at 48 square feet of heating surface, but actual measurement is stated to have been—wrought-iron tube radiator, 47.2 square feet, and the cast iron 47.6 square feet. The radiators were placed parallel to one another, 6 feet 6 inches apart on stands, 24 inches high above the floor. The positions of the radiators were not apparently equally exposed on account of windows, stairways, elevator shaft, &c., and to neutralize these differences a test with the radiators in one position, and immediately afterward another with the positions exactly reversed, was made. The experiment with the two radiators were conducted simultaneously. The temperature of the surrounding air was taken from the thermometers, one of which was suspended midway between the radiators 12 inches from the floor, and one on each outer side of the radiators, 6 feet distant from the nearest radiator and 36 inches from the floor. The positions of the radiators were called A and B, A being apparently the more exposed position. The duration of the test was four hours, and the average pressure of steam 8.2 pounds.

FIRST POSITION OF RADIATORS, Wrought Iron at A, Cast Iron at B.

	W. I. at A.	C. I. at B.
Average of condensed water drawn off in 10 minutes, pounds.....	3.37	2.38
Average temperature, thermometer 6 feet distant from each degree.....	50.3	49.15°
Average temperature, middle thermometer in degrees.....	57.3°	
Average of thermometer near W. I. radiator, above the thermometer near C. I. radiator.....	1.15°	

SECOND POSITION OF RADIATORS, Wrought Iron at B, and Cast-Iron Radiator at A.

	W. I. at B.	C. I. at A.
Average of condensed water drawn off in 10 minutes, pounds.....	3.14	2.41
Average temperature of thermometer 6 feet distant from each, degrees.....	51.45	53.00
Average temperature of middle thermometer in degrees.....	59.8°	
Average temperature of thermometer near C. I. radiator above.....	1.55°	
Average temperature of thermometer near W. I. radiator.....		

Summary.

	W. I. rad'r.	C. I. rad'r.
Mean temperature of the two thermometers during test and the radiators in the two positions, degrees.....	50.87	51.07
Weight of steam condensed during the entire test, pounds.....	78.1	57.5
Weight of steam condensed during the entire test per square foot of actual surface, pounds.....	0.413	0.345
Total units of heat given off per hour.....	18,651	13,723

The report adds: "It appears from these figures that the Walworth radiator gave out 35.90 per cent. more heat in the gross than the Bundy radiator, and 10.7 per cent. more per square foot of actual surface." On examining these figures it will be found that while the wrought-iron radiator condensed 41 per cent. more steam than the cast-iron radiator, it only affected the thermometer near it 1.15°, or 2 1/2 per cent. more than the effect on the thermometer near the cast-iron radiator; and when the positions were reversed, the wrought iron radiator condensed 10 1/2 per cent. less steam than before, but increased the temperature on the thermometer 1.15°, or 2 1/2 per cent. more than in its first position, and this radiator in its second position condensed 31 1/2 per cent. more steam than the cast-iron radiator in the position A, and effected a rise in the thermometer of 1.55°, or 3 1/2 per cent. more than the cast-iron radiator in the first position A, while the cast-iron radiator condensed 1 1/2 per cent. more steam in its second position (A) than in its first position (B), and effected a rise in the thermometer near it of 3.85°, or 7 1/2 per cent. more than in its first position, and 2.7°, or 5 1/2 per cent. more than the wrought iron radiator in the position A.

And throughout the whole test the effect of the cast-iron radiator on the thermometers near it in both positions averaged 3 1/2° in excess of the effect on them by the wrought-iron radiator, notwithstanding that the latter represented by condensation 35.9 per cent. more gross units of heat, and had 13 per cent. more heating surface than the cast-iron radiator. In a test by condensation, the effect on the thermometers should appear directly and uniformly, and not inversely, as in this case, if the air-heating and radiating capacities of the surfaces of a radiator are to be judged by the result. With such differences as there are in this instance, there is a loss of effect due to some cause.

The eighth annual meeting of the United States Association of Charcoal Iron Workers will open on November 15, at Nashville, Tenn.

At a meeting at Cleveland attended by a number of charcoal pig iron manufacturers preliminary steps were taken toward the formation of an association to put the business on a better foundation. A final meeting is to be held at Detroit on the 19th.

Mr. E. H. Walker, for many years Statistician of the New York Produce Exchange, has joined the editorial staff of Bradstreet's. Mr. Walker is perhaps the best informed man in the country on the statistics of grain, flour, provisions, live stock and kindred lines. He is the author of the only complete records of this kind in the country, and the inventor of the "visible" grain supply statement.

The merchants and manufacturers of Burlington, Iowa, have formed an organization under the name of the Commercial Club, for the purpose of advancing the material interests of the city. The prime movers in the project are impressed with the fact that if the people of Burlington wish to keep pace with other live cities of the West they must be at work, and they believe that five earnest men, working in a systematic manner, can accomplish a great deal more than a larger number working at random.

Messrs. H. R. Durkee & Co., 115 Dearborn street, Chicago, have been appointed sales agents for the iron ore mined by the Grand Rapids Iron Company. This company is composed of Chicago and Grand Rapids capitalists, who have purchased the Wheeling mine at Negaunee, Mich. They had taken an option on the mine, which was not operated in 1886, and, discovering fresh deposits of ore which had not been previously known, they leased it for a long term of years. They will supply the Mancelona Furnace with ore, and are negotiating to supply some of the other Michigan furnaces, but are prepared to ship to lower lake ports, being conveniently located for either lake or all-rail shipments. Their ore is rich in metallic iron, but is not of strictly Bessemer grade, although being soft it is suitable for mixture with hard ores for making Bessemer pig iron. L. H. Withey is president of the company; H. R. Durkee, vice president, and J. C. Holt, secretary and treasurer.

The Iowa Rolling Mill Company have been incorporated, with a capital of \$70,000, to operate the plant of the Burlington Rolling Mill Company, which they have purchased at Burlington, Iowa. The officers of the new company are as follows: Theodore Guelich, president; J. N. Price, vice president; J. T. Remy, treasurer; E. M. Wilson, secretary; M. C. Williams, superintendent. With the exception of the last two, the officers are all citizens of Burlington. They intend to increase the capacity of the present plant, so as to be able to produce from 30 to 40 tons per day of merchant bar iron. They will manufacture no other product at present. The works will be thoroughly repaired and will be started in a few weeks.

The Missouri Pacific Railway Company have, through their Eastern freight agency, issued a circular, under date of October 10, giving a special rate on iron product to Texas up to and including the 19th inst. This is a special rate of 32 cents per 100 pounds, will apply to iron, wire, nails and other products in carload lots, from East St. Louis and Cairo, Ill., to Denison, Sherman, Gainesville, Dallas, Denton, Weatherford, Waco, Austin, Temple, Belton, San Antonio, Marshall, Jefferson, Texarkana and other points in Texas on Missouri Pacific and Texas and Pacific railways, taking same tariff rates as Dallas. Full tariff rates will be restored on October 20.

Butterfield & Co., Derby Line, Vt., report that in the Reece Screw Plate department of their business they have recently added a number of men. The volume of business will compare favorably with their business of last year.

The syndicate of Wheeling capitalists, who some time ago organized the East Chicago Steel Company, for the purpose of leasing and operating the new Bessemer steel plant and nail factory at Hammond, Ind., near Chicago, have concluded not to carry out their design and have surrendered their lease. M. M. Towle, a large stockholder in the Chicago Steel Mfg. Company, the builders and owners of the plant, has leased the works and is making active preparations to put them in operation. His office is in the First National Bank Building, Chicago.

Negotiations for the sale of the Shelby Iron Works, in Alabama, to capitalists interested in the Woodstock Iron Company, of Anniston, have been discontinued. It is reported that the price asked for the property was considered too high by the intending purchasers.

The Texas and Arkansas railroad last week announced a rate of 56 cents per 100 pounds on iron, wire, nails and iron products from Pittsburgh and Wheeling to all points in Texas. This is a reduction of about 20 cents, and will be of advantage to Pittsburgh shippers.

The Orne Electric Outfits.

Bigelow & Dowse, Boston, Mass., are putting on the market a series of electric outfits which are intended to be handled by the hardware trade. One of these outfits complete is represented in Fig. 1, which is designed for call and signal work, and consists of one 2 1/2 inch box bell, push-button, wire and Orne battery. Outfit No. 2 is intended for dining-room and office work, for calling clerks, servants, &c., and has a floor push, represented in Fig. 2, instead of the push-button shown in Fig. 1. Outfit No. 3 is for door alarm, signaling when any one opens the door. The door attachment is shown in Fig. 3. It is obvious that with this arrangement the bell can be placed where it is most

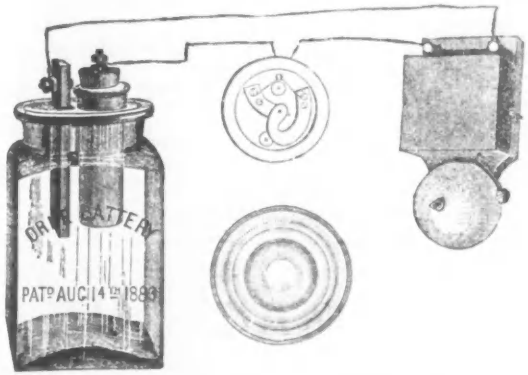


Fig. 1.—Orne Electric Outfit No. 1.

desirable, and not directly over the door. Outfit No. 4 consists of one Orne battery, wire and bell, with the bronze electric door pull which is shown in Fig. 4. Each outfit is packed in a separate box, all complete, with instructions telling how to do the wiring in the proper manner, so that the expense of the bell hanger's services may usually be dispensed with. After putting up the dif-

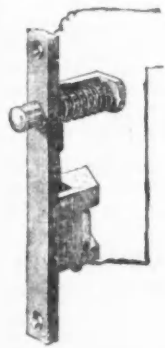


Fig. 3.—Door Spring Connection.—Outfit No. 3.

ferent parts of the outfit, all the customer has to do is to connect the wires and pour the solution into the bottle. Bigelow & Dowse prepare a neat showboard for the use of the trade. It is represented in Fig. 5, and illustrates the operation of the different outfits. It is made of imitation black walnut, and all the wire is on the outside,

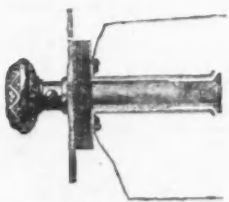


Fig. 4.—Bronze Electric Door Pull.—Outfit No. 4.

so that if it is set up on a counter customers can see how simple a matter is the putting up of the outfits.

Special emphasis is laid on the merit of the Orne battery, which is referred to as the strongest, simplest, cleanest and most economical. The following points are made in regard to it: That it has three times the



Fig. 5.—Sample Board.

power of any other open circuit battery; that it is perfectly clean, and does not have chemicals creeping over the outside, creating dirt and ruining the connections and working properties; that the solution does not evaporate, and does not constantly require the addition of water to keep it in working order; that it will last two or three years without renewing; that if it gets worked out, all that is needed to restore it to

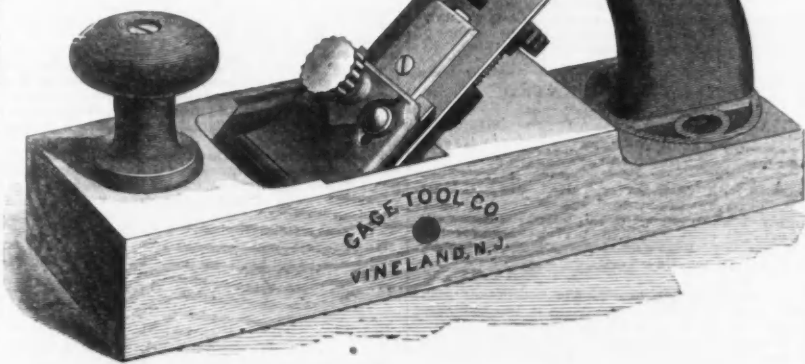
working order is to add new solution or zinc; that with it, if the wires get accidentally connected, it works for a while and then stops, and on removing the trouble comes back to its original strength immediately; that when not in use the zinc is not corroded or eaten up, and that it is always ready for use, making it reliable in its operation. Besides the outfits illustrated above the manufacturers announce a burglar window alarm and electric door mat, which rings a bell when one steps on it; a money-drawer alarm, gas lighting outfit and an electric lock. These outfits will doubtless be appreciated by the trade, putting in convenient form and at reasonable prices a line of goods which it is anticipated will come into quite general use. Information

Fig. 2.—Floor Push.—Outfit No. 2.

in regard to prices will be found in the Trade Report.

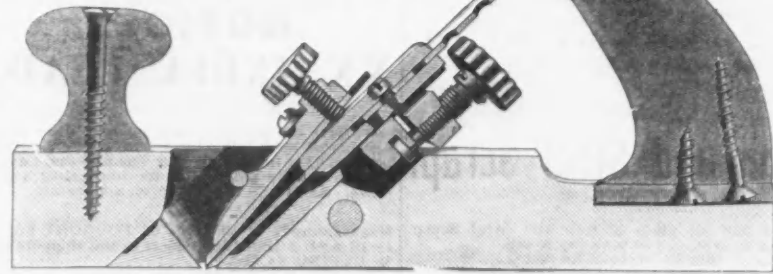
Self-Setting Bench Plane.

Figs. 1 and 2 represent a new self setting bench plane which is being introduced by the Gage Tool Company, of Vineland, N. J. This tool, the makers claim, combines both the advantages of many of the iron and wood planes already in the market. The construction, as will be gained by an examination of the sectional view, is very simple. In replacing the bit no setting of the same is required, as it enters into the milled groove provided for it, and sets itself with the greatest accuracy. To change the thickness of a shaving it is only necessary to turn the thumbscrew beneath the bit. When properly adjusted it cannot be set wrong or moved out of position by any such means as striking a knot while in motion. This feature is important and will be appreciated by all wood-workers. The cap is not attached to the cutter, but remains stationary, while the bit can be moved up or down by this thumbscrew. Even while



General View of New Self-Setting Bench Plane.

in motion the thickness of the shaving can be changed by a simple movement of the thumb and finger. The parts are so arranged that the bit or cutter can be squared with the face of the plane even if the cutter is not ground square with itself. This also is a very important feature. The throat of the plane is preserved from wear by being within the adjustable iron bit holder which extends through the plane and is securely fastened to a round steel rod passing through the stock. The cap and cutter can be removed and so accurately reset in the space of five seconds that the shaving will not vary one five hundredth part of an inch. This statement is made by the makers in order to indicate that the saving of time in setting the bit will amount to an important consideration in a year's use of the article. The

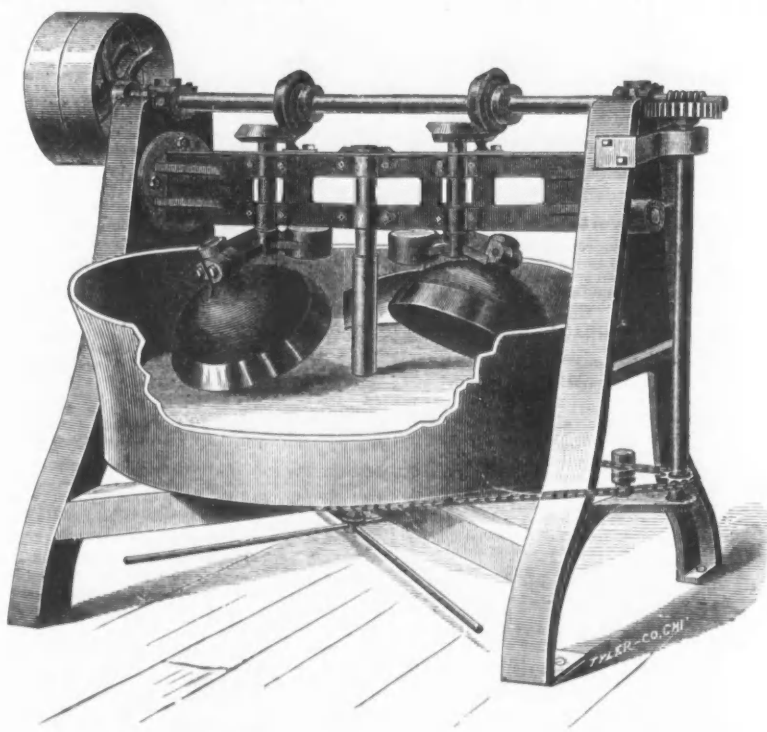


Longitudinal Section Through Self-Setting Bench Plane.

makers assure us that in the production of this article they use the best material, and pride themselves on their method of tempering, which secures a uniform quality, and which also enables them to warrant their plane irons to stand the hardest hemlock knot to the satisfaction of the user. The plane can also be changed from single to double and from double to single, as the requirement may be, in a very short space of time. Accordingly the buyer of this article has the advantage of a single iron for rapid work and straight-grained wood, and a double iron for finishing or for coarse grained wood. The wood stock of the tool is soaked with hot wax or oil. The parts are of such a character that they may be adapted for use in an old fashioned wood plane, thus making it possible to have old tools remodeled so as to use these improvements.

The Chicago Circular Rocker Cut Meat Cutting Machine.

This machine, which is represented in the accompanying illustration, is put on the market by Orr & Lockett, Chicago, Ill. It



Chicago Circular Rocker Cut Noiseless Meat Cutting Machine.

will be observed that it has two bell-shaped heads which carry the cutting knives. These knives are 3 inches wide, made in three sections of the best tool steel, and form, it will be seen, a circular cutting knife. The heads to which they are fastened weigh 54 pounds each and are attached to an arm by which it is operated, and in which it revolves when the machine is in operation. The diameter of these heads is 18 inches. The manner in which they are operated is indicated in the

cutter heads; that it requires less power than other machines, from its simplicity in design and construction; that it will keep the cutting block in a smooth and level condition, and that from the simplicity of its construction it is not liable to get out of order.

The Bartlett Beef Tea Press.

This article, which is shown in the illustration given below, is put on the market by S. R. Bartlett, 29 St. John's Place, Brooklyn, N. Y., for whom the Dover Stamping Company, 110 Chambers street, New York, are agents in this city. The press consists of four parts—the tin ring without top or bottom which forms the sides of the press; the plunger, with threaded upright, forming the bottom; the handle and cover of the press, and the thumb-nut or lever, which



Bartlett Beef Tea Press.

works on the threaded upright of the plunger and by which the power is applied. In use the plunger is placed in the tin ring, and meat put between the plunger and the cover, when, by turning the thumb-nut, the plunger is drawn up and the liquid extracted drops down into some proper receptacle. Attention is called to the simplicity of the presses and the great power that is exerted on the meat, while their comparative inexpensiveness is alluded to. Information in regard to the price to the trade is given in the Trade Report.

The Bartholdi Tubular Lantern.

This lantern, which was patented March 29 1887, is manufactured by Hobart, Craig & Co., Southington, Conn. The lantern is represented in Fig. 1 in position for use, while Fig. 2 illustrates its lifting apparatus and shows it in position for lighting. The lift is very simple, as, taking the bale by the right hand, passing the thumb through the ring in the lifting wire, and pulling up, the globe will be lifted as in Fig. 2. For holding the upper part of the globe there is an automatic spring, which is not shown in the cut, but by means of it the globe is securely held in place when in use, while its removal is easily accomplished when desired.

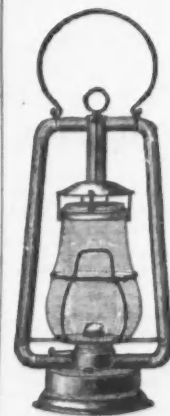


Fig. 1.—Bartholdi Tubular Lantern.

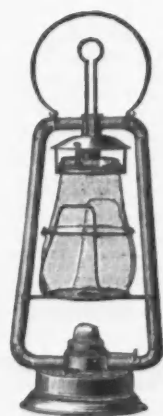


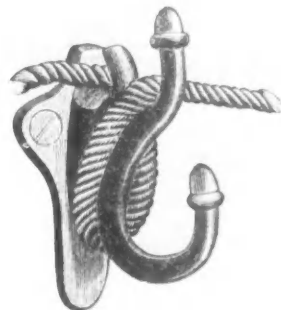
Fig. 2.—Bartholdi Tubular Lantern, Showing Lift.

Especially attention is called to the spring-guard by which the globe is protected. When it is desired to remove the globe from the guard a hook on one side is unhooked, when the globe is readily taken out. Alluding to the advantages of the special features possessed by this lantern and the excellence

of the light given by it, the manufacturers put it on the market with confidence that it will be appreciated by the trade.

The Diamond Line Holder and Wardrobe Hook.

The accompanying illustration represents an article which is put on the market by Curtis Goddard, Alliance, Ohio. It is made in two pieces, giving the hook a little play and permitting it to take a firm hold of the rope, as shown in the cut. It is intended for the clothes yard, or any place where it is desired to fasten a line for holding clothes after washing and ironing or for drying

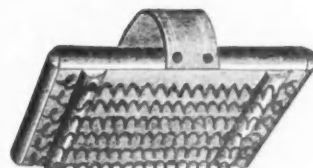


The Diamond Line Holder and Wardrobe Hook.

and airing. It is described as holding the line either way, so that if the line breaks between any two of them the remainder of the line does not come down. The point is also made that it does not mar the line, and that it is easily put up. Its adaptability to use as a wardrobe hook is also alluded to.

The Leader Curry-Comb.

This comb is made by the Morris Hardware Company, Youngstown, Ohio. It is illustrated in the cut given herewith, which shows its special features. The comb is described as made of a block of wood 4 x 6 x 3/4 inches, with six coils of cast-steel square wire, the coils being 3/4 inch in diameter. Six holes are bored at either end of the block to receive the ends of coils, and a



The Leader Curry-Comb.

molding nailed on to hold the springs in place. It is claimed that this comb will clean where any comb will, and will do its work better and quicker than the regular article, while at the same time the fact that there are no sharp points to irritate the skin is alluded to as a special advantage. The point is also made that the spiral springs readily enter the hair, and that their operation is especially efficient in cleaning out the brush, with the advantage that it is not liable to cut the bristle. Its durability is also alluded to, and the fact that the comb is self-cleaning, it not being necessary to knock it against anything to clean it. The comb was patented May 31, 1887.

Brick and Beaded Sheets.

The Sagendorf Roofing and Corrugating Company, of Cincinnati, Ohio, are just introducing two novelties in the metal trade that will, no doubt, command the attention of architects and builders, as well as sheet-metal workers. One of these is designated as brick sheets. A sheet of iron, instead of being corrugated or crumpled, as is usual in treating metal, is embossed or pressed into the form of courses of brickwork. The depth of the depressions in the surface is about 3/8 inch. In laying, the sheets may be used either with the depressions of the joint against the foundation, or in the reverse way, as may be preferred. If the depressions of the joints are placed against the foundation, a slight air chamber is formed equal to the surface of the bricks represented. On the other hand, if the sheet is placed in the reverse manner, the depression of the mortar projecting, the air chamber is contracted to the space of the joint, the surface of the bricks laying against the foundation. Sheet iron treated in this way is, of course, intended for siding, and where it is judiciously managed it forms a very striking imitation of a brick building. The sample before us is painted in about the usual color that is employed with corrugated iron and roofing iron, with the imitation mortar joints in black. The effect is very good. We learn that the company produce this material in sheets 4 feet long and 25 inches wide, in both black and galvanized iron. It is packed either 4 or 5 squares to the crate. The plain sheets are painted on both sides, the striping as above referred to being done after the sheets are in position on the building. The beaded iron is a fac simile of that already described, save that the vertical joint lines are lacking. It is manufactured in the same shape, and put up in the same size packages. The claim is made for this material that it is as durable as brick, and has the advantage of being subject to low insurance rates.

H. C. Fownes, treasurer of the Carrie Furnace Company, Limited, of Pittsburgh, and James Hemphill, of McIntosh, Hemphill & Co., of Pittsburgh, have just returned home from a three month's trip to Europe. The object of the trip was an investigation of the labor, iron and steel question in England. Both gentlemen report that they had a very enjoyable as well as beneficial trip while absent.

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20-ft. bed 23 in. Engine Lathe.
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ze of Cylinder, 14½ in. x 22 in. ; Four (4) 5 ft. 6 in.
rivers ; weight on drivers, 34,000 pounds ; total

eight on drives and truck, 50,000 pounds; Krupp
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S. M. YORK, Cleveland, Ohio.

MECHANICAL.

Motive Power by Atmospheric Exhaustion.

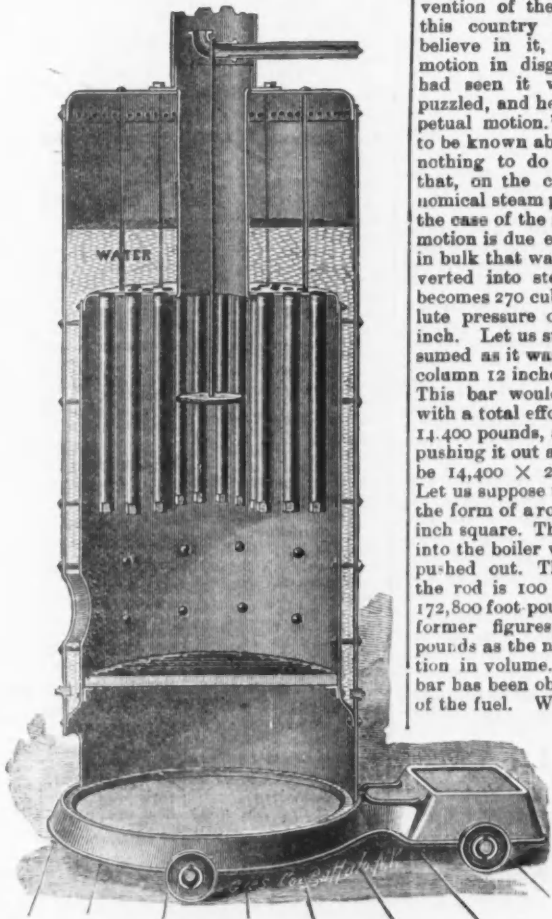
Of the frequently mentioned and described system in Paris of distributing power in dwelling houses by atmospheric exhaustion in subterranean mains, we find the following additional particulars: The installation in the Rue Beaubourg commenced operations in January, 1885, and on the 1st of May, 1886, the power was entirely utilized in driving 70 small motors, in as many workshops, of a power of from 40 foot-pounds to 290 foot-pounds, on a length of about 5000 feet of passageway in the Rue Beaubourg and the adjoining streets. Two new exhausting steam engines and pumps are in course of erection alongside the first one, and the complete installation will consist of three exhausting steam engines and pumps of 75 horse-power each, or together 225 horse-power; two steam boilers; a system of passageways 6000 feet long, and about 200 small motors on the different floors of a block, or separately in the different houses of the quarter.

Electric Traction Increases for Locomotives.

The Railroad and Engineering Journal recently referred to a plan for using electricity to increase the adhesion of locomotive drivers to the rails which was tried on the Central Railroad of New Jersey nearly 30 years ago. No official record of the tests seems to have been preserved in the offices of the company. Some of those who took part in them, however, are still on the road, and their testimony is that the trials were continued for some time on two or three engines, but with little or no success, and were finally given up, with the conviction that the results obtained were not sufficient to warrant further use of the apparatus. The arrangement used was a battery (or batteries) carried on the running board of the locomotive, from which connections were made to the tires by means of a magnetic coil. No very definite description of the apparatus survives, however. It was the work of a French inventor named Quetel, we believe. These experiments, however, were really of very little importance, and are only of interest as showing how present investigations were anticipated at an earlier day, when less was known about the subject of electricity than now.

The Climax Vertical Boiler.

We give on this page a sectional view of a vertical boiler built by the Climax Mfg. Company, of Corry, Pa., and supplied by



THE CLIMAX VERTICAL BOILER.

Built by the Climax Mfg. Company, Corry, Pa.

them in connection with their engine, which we illustrated and described last week. It forms, however, a desirable form of boiler for general use. It is of the drop-tube type, and its base has a water bottom, so that it can be set on the floor without incurring any special risk. A central baffle-plate is arranged, as shown, to prevent the too ready exit of the hot gases through the central flue leading to the chimney.

Perpetual Motion in Disguise.

An item relating to a "non-exhaust steam engine" has of late been widely circulated. As its name implies, the engine is designed to return all the steam used to the boiler with a saving of from 75 to 80 per cent. There are no valves, eccentrics, steam chests, cut-off devices or any other delicate or intricate working parts, four single-acting cylinders and a peculiar and not clearly described balancing gear performing all the work. That the whole matter is rubbish is immediately apparent. The London Engineer takes the opportunity afforded by the repeated publication of the item to deliver a short sermon on perpetual motion machines. From it we quote:

Most engineers will, of course, say that the thing proposed to be done is impossible. Yet, if they were asked to say in a very few words why it cannot be done, they would be at fault. Let us try if we can put the explanation of the obstacles to the production

of perpetual motion in a nutshell. In the first place, then, let us dismiss at once such words as energy and force, which may mislead, because they convey no clear ideas, and confine our attention entirely to motion, the meaning of which word every one understands—pace some of the professors. Now, it is absolutely true that no machine, or combination of parts, can create motion. Motion is as indestructible and uncreatable as matter. So far as men's knowledge goes, there is no more and no less motion in the universe now than there was in the beginning. The first question, then, to put to the perpetual motion man and to be answered by him is, simply, From what source do you obtain motion? The answer given may, of course, vary, but we know that the quantity of motion contained in any substance, be it a gas, liquid or solid, cannot possibly be infinite. On the contrary it is strictly limited, and this being so, the quantity of motion available for the machine must be limited, too. For example, if we derive our motion from gravity, then the quantity of it to be got out of a pound or a ton falling a foot or 100 feet is well known. The next point to be considered is that an effect cannot be greater than its cause. If we suffer 1 pound to fall 100 feet it will do work equivalent to 100 pounds falling 1 foot, and so on. But the weight cannot fall forever, and when it is down it cannot be raised again to its original position without the expenditure of quite as much motion in lifting it as was expended by it in falling. This truth is so clearly felt by most persons that the perpetual motion man disguises and hides the fact from himself by the use of wheels, levers, springs, and what not. We may clear all these things away, however, and go to the two ends of the process, so to speak; something must be put in at one end if anything is to be taken out at the other. The intermediate stages can in no way affect the matter; the inventor will freely admit that no one part of his apparatus can by itself produce motion. If this be true, it is equally impossible for all the parts assembled to do what none of them separately can effect. In answer to this argument we have heard it urged that although one man by himself cannot lift a given weight, that 20 men can. The objection to this is, of course, that it does not apply; although one man cannot lift the whole weight he can lift a part of it, but no separate portion of the perpetual motion machine can generate or create even ever so little motion of itself.

Leaving the more absurd and crude forms taken by the idea, let us consider this notion that steam can be pumped back into a boiler. No doubt the injector is responsible for the origin of the idea. Our younger readers may be surprised to hear that when the invention of the injector was announced in this country many engineers refused to believe in it, regarding it as perpetual motion in disguise. When, however, they had seen it work, they were yet more puzzled, and held that it really was "perpetual motion." By and-by, as more came to be known about it, it was seen that it had nothing to do with perpetual motion, but that, on the contrary, it was a fairly economical steam pump and nothing more. In the case of the steam engine we find that its motion is due entirely to the augmentation in bulk that water undergoes when it is converted into steam. A foot of cold water becomes 270 cubic feet of steam with an absolute pressure of 100 pounds on the square inch. Let us suppose that all this steam assumed as it was made the shape of a bar or column 12 inches square and 270 feet long. This bar would be thrust out of the boiler with a total effort or push of $144 \times 100 = 14,400$ pounds, and the total work done in pushing it out against that resistance would be $14,400 \times 270 = 3,888,000$ foot-pounds. Let us suppose that the feed water assumed the form of a rod or bar 1728 feet long and 1 inch square. This water-rod must be pushed into the boiler while the steam-rod is being pushed out. The resistance or push against the rod is 100 pounds, and $1728 \times 100 = 172,800$ foot-pounds; deducting this from the former figures, we have 3,715,200 foot-pounds as the net gain due to the augmentation in volume. The motion of the steam bar has been obtained from the combustion of the fuel. We can see at a glance that to push this steam back into the boiler as steam means the substitution of a steam bar 270 feet long and 1 foot square for a feed water bar 1728 feet long and 1 inch square. The motion against a resistance required to force the steam bar into the boiler will be exactly equal in amount to the motion against a resistance with which the steam bar was forced out of the boiler. We need in no way concern ourselves

with pumps or cranks or wheels, or anything else. The steam knows nothing about such things. At the two ends of this process are the boiler, and as much force must be expended in forcing steam into the boiler as is spent in forcing it out. If it is urged that the volume of the steam returned is less than that delivered, then the answer is, by just so much is the economy claimed for the engine diminished.

Expansive Working in Direct-Acting Pumping Engines.

Direct-acting is distinguished from rotative engines have peculiar advantages in their application to pumping water. (1) As each individual stroke is a distinct operation, the available expansion is independent of the speed or number of strokes of the engine; (2) the action of the engine is more favorable to proper action of the pump valves; (3) there is a more uniform distribution of strains, and the machinery and necessary building and foundation work are of a simpler and less expensive character; (4) a practical proof of advantages possessed by this type of engine is found in the fact that it is very largely employed, and very frequently economy of fuel is sacrificed to secure the good qualities of this type of engine. With regard to the question of

* From a paper by Henry Davey, presented at the last meeting of the British Association.

economizing fuel, a very large number of direct-acting engines are of a construction which does not admit of expansive working, and are therefore extremely extravagant in fuel. The earliest direct-acting expansive working engine was the Cornish, and its good performance is well known. The compound differential engine, like the Cornish, depends for its expansive working on the mass of its moving parts. The pump rods or loaded plungers form a reciprocating fly-wheel, its functions being expressed by the formula $\frac{WV^2}{2g}$. With this engine a considerable degree of expansion is possible, but it is not always possible to employ long

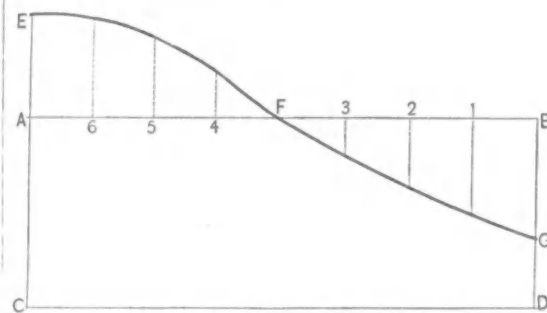


Fig. 1.

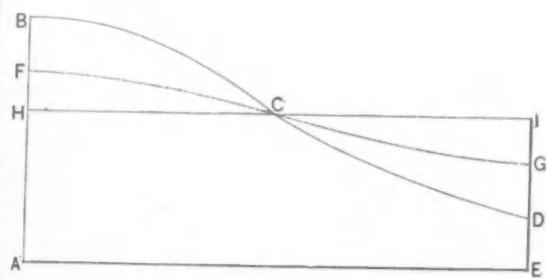


Fig. 3.

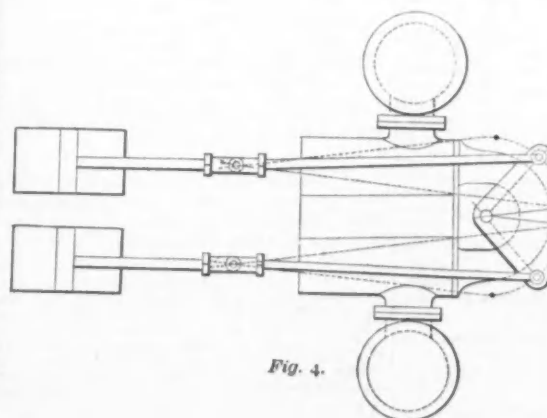


Fig. 4.

EXPANSIVE WORKING IN DIRECT-ACTING PUMPING ENGINES.

pump rods, nor convenient to have loaded plungers. At all events, it would be often convenient if we could dispense with these in meeting local circumstances, and a cheaper engine would be produced. Mr. Davey has endeavored to secure additional expansion in direct-acting engines by coupling the steam and pump pistons together in such a way that the steam piston gets a mechanical advantage over the pump piston as the stroke is produced. In other words, the velocities are equal at the beginning of the stroke, but the relative velocities vary as the stroke proceeds, the velocity of the steam piston being the greater of the two.

In Fig. 1 let the pump resistance be represented by the parallelogram A B C D, and the engine power diagram by the figure C E F G D; and supposing the parts of the engine to have no weight, then means are required by which the piston of the engine may move with varying velocities relative to that of the pump piston, exceeding the mean velocity by the ordinates 1 2 3, and falling short of that velocity by the ordinates 4 5 6. Let A (Fig. 2) be the engine and B the pump piston, and C a triangular frame turning on the fulcrum D. The pump piston is attached to the frame at the point E by means of a vibrating connecting rod, and the engine piston to the point F by means of a similar rod. While the engine is making its stroke in the direction of the arrow the pump piston is decreasing in velocity relative to that of the engine piston, the ratio being determined by the relative positions of E and F. In applying this mechanism to pumping engines, it is first necessary to determine the ratio of expansion to be employed, and then to see how nearly the force and resistance can be equated. Let A B C D E (Fig. 3) be the combined diagrams of a compound engine working with the given ratio of expansion, A F G E the diagram of effects of the varying velocities of the engine and pump pistons, and A H I E the pump resistance diagram. Then acceleration of velocity takes place from H to C; and knowing the weight of the moving parts the acceleration may be calculated. It will at once be seen that the mechanical advantage obtained greatly reduces the acceleration for a given mass. The practical application of this invention is shown in Figs. 4, 5 and 6. Fig. 4 represents its application to a double cylinder steam pump. The piston rods connecting the steam pistons with the pump pistons are coupled by means of connecting rods to a triangular rocking frame. The pumps are single acting, with plungers, so that when one is making its forcing stroke the other is making its suction or idle stroke. The result of this arrangement is that the two steam pistons are both practically employed in overcoming the resistance of the forcing plunger, and the plunger making its suction stroke requires but little force to move it. The pressure exerted by the piston coupled

direct to the piston rod of the forcing plunger is fully taken by that plunger, but the pressure brought to bear on the same plunger by the other piston is not the full pressure on that piston, but is dependent on the leverages or relative velocities of the said piston and plunger, determined by the position of the rocking frame. A very great mechanical advantage can thus be obtained, fully realized by reference to Fig. 2, before described. This enables a fourfold expansion to be employed in non-compound, or eight or tenfold expansion in compound engines, having only a small mass in their moving parts. The effect of mass is to

The device is intended to be attached to chucks for holding work in the lathe or boring mill, whereby the relative sizes of different pieces of work secured in the chuck may be readily indicated, but it is more particularly intended for use in connection with the process of boring the hubs of car-wheels to receive the axles.

The chuck is of the common well-known form, having jaws, A A A, sliding in radial grooves in the body B, and operated by screws b b b, which may be geared together so as to operate simultaneously, or may be operated independently; C is a rack-bar, which is secured to one of the jaws, A, so as to move with it; D is a toothed pinion

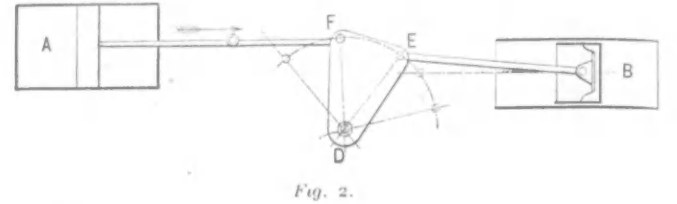


Fig. 2.

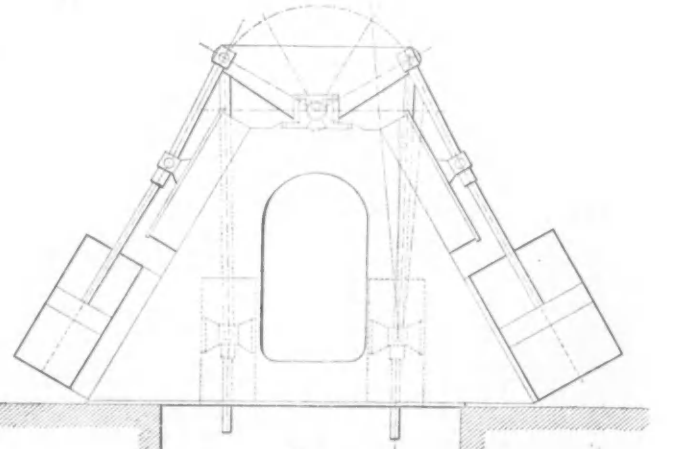


Fig. 5.

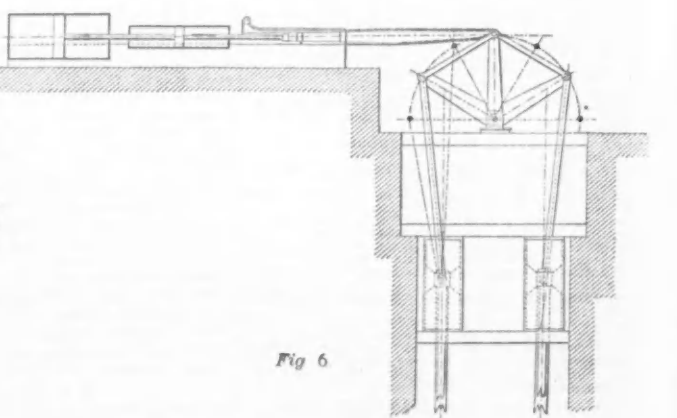


Fig. 6.

reduce the mechanical advantage necessary for a given rate of expansion, and, as the moving parts of engines must necessarily have mass, larger expansions are obtained than would be possible from the mechanical advantage only. Fig. 5 illustrates this principle in use for water-works pumping engines, and Fig. 6 its application to mining engines.

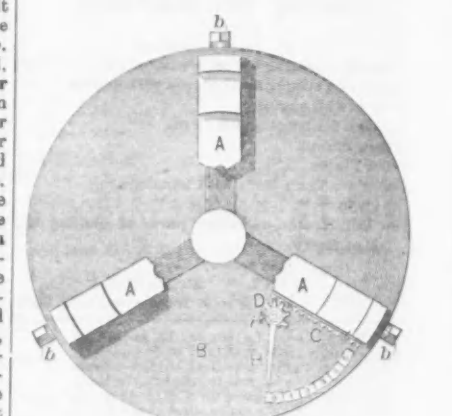
Compound Locomotives.

Commenting on some very good results in point of economy realized by a compound locomotive on the Chemin de Fer du Nord, in France, the London Engineer says: It would be quite possible to take any one locomotive out of a dozen of the same type, and doing nominally the same work, and by putting it into the hands of a very careful and competent driver and fireman to make it get on with 6 per cent, or even more, less fuel than its compeers. There is much more than 6 per cent. difference between a good and a very good fireman. With all the honesty of purpose in the world, it is difficult for the most careful experimenter to arrive at the truth about locomotive performance. The true test must in the end be the coal, lubrication and repair bills, not of one or two, but of at least a couple of dozen engines, and even these bills must be for considerable periods of time. The proper principle to follow is to make the compound engine as like the non-compound as possible. If this principle be fully carried out the locomotive superintendent will have the satisfaction of knowing that he is playing a game of "heads I win, tails you lose," because he sacrifices nothing certain in the pursuit of a possible gain. Even, for example, if an engine of the Worsell type did not show any remarkable economy in fuel, it would be no worse than an ordinary non-compound engine. But this certainly cannot be said of such an engine as that on the Chemin de Fer du Nord. Everything in it has been staked on the saving of fuel, and if that end be not secured in a large degree the engine will find its way to the scrap heap in a very short time.

Indicator Attachment for Chucks.

All manufacturers of car-wheels know that a series of wheels cast from the same pattern will vary slightly in diameter. It is necessary after the wheels are finished to go over them carefully and measure their diameters in order to put those of exactly the same size together. A slight variation of this character between two wheels on the same axle is highly objectionable for obvious reasons. The usual method employed in measuring diameters is to use a tape line, but this is found in practice not to be as exact as it should be for this class of work. Charles O. Wilder, of Indianapolis, Ind., has, therefore, invented a very simple, but effective, mechanical device for performing this work, of which we annex an engraving.

arranged to revolve on a stud projecting from the face of the chuck body B and to engage the rack bar C. The pinion is provided with a hub, to which the index hand H is adjustably secured, so as to move with the pinion by means of a set-screw, I. The point of the index hand moves over a graduated arc, as shown. It will be observed that this arc, which may be a separate plate secured to the face of the chuck itself, is arranged near the periphery of the chuck at a point not covered by the largest piece of work which the chuck may hold, and that the relation of the index hand to the rack and pinion is such that a slight movement of the jaw will cause the point of the hand to pass over a comparatively wide space, thus enabling the operator to easily note slight differences in the diameters of wheels held between the jaws. In operation a wheel of standard size, and known as No. 1, having been placed in the chuck and



Indicator Attachment for Chucks, Made by Williams, White & Co., Moline, Ill.

tightly secured by screwing the jaws in against its periphery, the index hand, turning loosely on the hub of the pinion D, is placed opposite the graduation 1 on the arc, and is then secured in position by means of the set screw I. The standard wheel being now released and another wheel placed in the chuck, if when it is secured the index hand stands at 1, the wheel is of the same diameter as the other, and is marked 1; if at 2, the wheel is marked 2, and so on for the different sizes.

The inventor has used this indicator for some time in this particular class of work, with very satisfactory results. Williams, White & Co., of Moline, Ill., control the patent, and are arranging for the manufacture of the device.

THE WEEK.

The King of Korea in August last received the officers of the United States S. S. ship Omaha with marked tokens of respect, and in his speech expressed more confidence in the Americans than in any other people. In proof of this the Korean Government appointed their first foreign minister to this country.

Among the novelties of recent importation are 142 tons of cliff-stone by a steamer from Hull, and numerous blocks of granite from Glasgow and other ports in the United Kingdom, indicating the scarcity of freights in the Western Transatlantic trade. The stone serves well as ballast and probably sells in New York for enough to pay the cost of handling.

Nathaniel L. McCready, an old and well-known New Yorker, died at sea on the 3d inst. Mr. McCready organized the Old Dominion Steamship Company in 1865, and has ever since been its president. He was a director in the Farmers' Loan and Trust Company and the Empire City Fire Insurance Company, and a member of the Chamber of Commerce.

A French gunboat has penetrated the African continent to Timbuctoo, after strong opposition from the Mohammedan chiefs. For many years thousands of the finest ostrich feathers in the market have come from Timbuctoo. Packed in bales, they have been borne across the Sahara on camels to Morocco and thence to Europe. The special purpose of this expedition was to endeavor to divert these caravans from the desert route to Bamaku, and to open a new outlet for the rich products of these countries bordering the Sahara up the Niger and down the Senegal to the sea.

The Dock Commissioners have passed a resolution requiring the occupants of river front property on the East River between Sixth and Thirtieth streets to vacate, as the land is claimed by the city. The principal property holders against whom suits will be brought are William H. Webb, the Metropolitan Ferry Company, the assignees of John Roach, the estate of George Law and the Consolidated Gas Company. These parties will, of course, fight to maintain their possessions.

The British steamer Hankow arrived at this port with 1500 tons of tea from Kobe, Japan, having made a trip around the world in 206 days.

The Nautical Society of Hamburg has offered a prize of 500 marks for the best essay on the subject of calming the sea by the use of oil. An exhaustive description of experiments of the effect of oil made up to the present time is required, also a criticism of the apparatus used thus far, and especially complete directions for its use by large steamers and sailing vessels.

The committee of which Mayor Hewitt is chairman, appointed to locate the proposed new municipal building, report in favor of the City Hall Park site, and the plan suggested provides for two wings, one fronting Park Row and the other fronting Broadway at right angles to the City Hall and the new Court House. The ground to be taken includes the site of the present Register's Office. The Park row wing is to measure 191 feet by 180, the Broadway wing 220 feet by 160. Each will be six stories high. Mayor Hewitt said that the architectural style of the present City Hall was worthy of imitation in the new building.

The improvement of New York harbor is a subject treated at some length by Lieut. Col. Walter McFarland, Corps of Engineers, in his annual report. He says the indications are that the work of deepening Gedney's Channel will be finished this year. The dredges will then be set at work on the main ship channel, the deepening of which is to be finished by December 1, 1888. Under the present arrangements 700,000 cubic yards of material will be removed from Gedney's Channel and 1,500,000 from the ship channel. This is said to be not much more than one-half the amount of material that must be removed to secure a depth of 30 feet at mean low water, with a width of 1000 feet, and the removal of the remainder will cost \$540,000.

The contracts for five vessels building at Cramps' shipyards, in Philadelphia, foot up \$4,728,000.

The display of agricultural machinery at the St. Louis fair is larger this year than usual, most of the leading manufacturers of farm implements, especially in the West, being represented. Every available foot of space in the several pavilions is taken, and much of the light machinery has been assigned space outside among the heavier implements. Threshing machines, saw-mills, corn-shellers, hay-stackers, and other ponderous machines are confined to the limits annually assigned to this class. The entire department covers an area of 32 acres. The exhibit of improved machinery and recent inventions in the agricultural line is noteworthy.

It is alleged that many merchants are dissatisfied with Collector Magone on account of delay in refunding duties collected under Oberteuffer decisions, the amount involved being, according to one of the attorneys employed, not less than \$1,200,000. The collector charges that the delay is on account of the inefficiency of clerks employed before his assumption of office. In a conversation Mr.

Magone stated: "When I came here there were 28,000 unliquidated entries, and with an increase of one-seventh in the business, I have now only 27,000 unliquidated entries on hand. I have added a number of clerks to the force in the Liquidating Bureau, but I must have more. I must also remove inefficient men, and they must go. Some of them are so ignorant that they could not multiply 43 by 43. Under the system of promotions these men's places can easily be filled."

London papers represent that the new settlers from British Guiana, who are filling up a section of fertile territory on the Orinoco River hitherto claimed by Venezuela, are sending down to the seaboard large amounts of gold. The precious metal is found in abundance in the basins of the Cayuni and Yuruari Rivers. The Venezuelans meanwhile threaten expulsion.

John D. Kernan, Railroad Commissioner of the State of New York, resigned his official position to resume the practice of law.

The railroad export discrimination against New York and in favor of Chicago is said to be still in full effect. Immediately after the appointment of a committee of the New York Produce Exchange to protect the rights of the New York export trade, the railroads agreed to readjust their rates on a basis of equity, carefully avoiding discriminations in favor of either market. The rate reform was ostensibly put into operation at once, but it was almost as soon discovered by the New York trade that freight contracts had been made ahead under the old discrimination rates to a date in many cases well into next year, thereby practically rendering null and void in its influence in this market the consent of the roads to return to equitable rates.

The trunk line railroads centering in New York report, perhaps without exception, that they had a larger freight traffic in September than for any corresponding month for many years, which is attributed to general activity throughout the country, and the fact that the busy season is so much extended creates confidence in its permanency. E. Clark, Jr., general freight agent, said that the freight traffic of the Central for September would show a handsome advance over August and a large increase over September, 1886. "We are doing more business," he said, "than we have ever done before, and the records will show it. I cannot say why—have not time to go into that. We are doing the business because we have the business to do." The same story was told at the Pennsylvania offices, both as regards passengers and freight. Freight business was found in much the same state of improvement as was claimed at the offices of the New York Central, and there was said to be an increase for September over both August of this year and September, 1886. The business of the New York, New Haven and Hartford Railroad for September shows a considerable advance over September, 1886.

The order of the Knights of Labor, according to the report of General Secretary Litchman, now claims over half a million members. The number of members reported in good standing at the last session of the General Assembly was 702,924, and the number of members in arrears 26,753. This made the apparent membership of the order, as then reported, 729,677. In spite of all the opposition since the Richmond convention the total number of members reported in good standing on July 1 is, in round numbers, 485,000. Add to this nearly 50,000 who are in arrears, and the membership of the order would be 535,000 July 1, 1887. This would indicate an apparent decrease of about 195,000 members. The receipts for the fiscal year ending July 1 are \$388,731, giving, with the balance on hand, a grand total of \$508,647.

Capt. G. C. Goss, who has of late resided in New York City acting as contracting agent for the New England Shipbuilding Company, has recently been in Bath endeavoring to stir up the shipbuilders and capitalists of that city to the point of establishing an iron shipbuilding plant.

There is a rapid development of cotton manufacturing throughout the South, under the stimulus of liberal profits, which the *Manufacturers' Record* shows to have averaged as high as 20 per cent. on the investments thus far. South Carolina, North Carolina and Georgia take the lead.

The pecuniary embarrassments sometimes experienced by New Yorkers who are unfortunate in business were illustrated last week in the case of Wm. Coogan, who borrowed \$8 on furniture put into a storage warehouse and afterward found he had incurred legal fees and expenses for chattel mortgage, &c., amounting to \$61. Worse yet, the furniture was hastily sold under foreclosure before he could find the mortgagee. Justice Murray pronounced the case a "dastardly outrage," and ordered that the furniture be restored.

The Hamburg-American Packet Company have decided to appropriate \$2,500,000 for the construction of two twin-screw steamers for the New York service to be ready next spring.

Two competing gas companies formed in Chicago some time ago have been consolidated as "a trust," notwithstanding the conditions of their charter that entering a combination, directly or indirectly, should work absolute forfeiture of the privilege. A strong

movement is taking place in favor of proceedings to test whether the conditions of a municipal grant can be thus nullified.

About 100 feet of the Nashua Company's canal dam, at Nashua, N. H., were washed out, causing the mills to shut down. A muskrat's burrow was the beginning of the trouble.

The Governor of Wyoming estimates the population of that Territory at 85,000. Stock grazing has suffered from severe winters, but that business can be properly combined with farming. Bituminous coal deposits are found at numerous localities in the Territory, and the oil fields are important.

The latest "boom" is at Tallapoosa, Georgia, which was a dull village three years ago, but is now one of the most important stations on the Georgia Pacific Railroad.

The smoke nuisance arising from burning sawdust and shavings in Patterson's box factory in Duane street, was the subject of complaint by dry goods men doing business in that neighborhood, and last Friday in the Supreme Court Justice Lawrence decided that the defendants must so conduct their business in the future as not to work annoyance or discomfort to the plaintiffs by using coal, and abstain from the burning of shavings and sawdust.

Smuggling on an extensive scale is taking place at ports on Puget Sound from British Columbia, as appears from the fact that at Victoria there are no less than 11 establishments engaged in preparing crude opium for the American market, and which reaches the United States without a tithe of its paying duty.

The United States Consul General at Shanghai reports to the State Department the discovery of a system of counterfeiting well-known American brands of cottons by importing an inferior grade of goods and affixing thereto imitations of favorite trade marks. A merchant guilty of this practice was convicted and fined, and, on account of the publicity given to his fate, the importers had to seek a new market, and the scheme was checked. Mr. Kennedy instances the matter as showing "the necessity for plainly branding all goods."

The Empire Subway Company have filed articles of incorporation in the County Clerk's Office, with a capital stock of \$200,000, to manufacture patent pipes, ducts, apparatus for electric wire conductors, conduit and air-line electric systems. The incorporators are John Burton, Maurice Marques, and Allan W. Paige. John B. Kerr is a trustee in addition to the above-named gentlemen.

The merchants of Detroit, assembled in the Board of Trade hall, initiated a movement to secure a permanent exposition in that city. Respecting the success of the exposition at St. Louis, the secretary reported that the cost of grounds and building and their maintenance have been \$800,000, backed up by a capital stock of \$600,000, subscribed for in shares of \$25 each in an open canvass of the city. The largest share of stock taken was \$10,000, and four blocks of that amount were issued. The profits of the first year aggregated \$47,000, the second year \$55,000, the third year \$60,000, with the indications for the current year pointing to \$70,000. W. G. Byrne, secretary of the Minneapolis industrial exposition, gave the total cost of their building plant as \$350,000, the original sum, \$320,000, being raised by popular subscription. The running expenses average \$1,500 per day, and the net profit for 1886 was \$15,000, with every prospect of doubling that sum during the present year.

Commander Meade visited the Samoan islands when in command of the steamer Narragansett in 1872, and succeeded in getting the chiefs to place the harbor of Pango Pango under the protection of the United States Government with a view toward establishing a coaling station there, it being on the direct route between America and Australia. In the future it will probably play an important part, as the harbor is completely landlocked and has an entrance clear of rocks and water for the largest vessels. A special agent was sent out after the return of the Narragansett to negotiate the extension of the protectorate over all the islands, but in 1875 a native chief was elected King, and the American special mission ended by the agent becoming Prime Minister to the King. The latter has shown numerous instances of friendly feeling to the United States, and has granted permission to establish a naval and coaling station there, of which the United States have never fully taken advantage.

In a report to the Department of State upon the trade of Ceylon, United States Consul Morey says that Germany is rapidly advancing her trade and commerce throughout the Orient, and even now her merchants are established on a firm basis in Ceylon. The local market is beginning to abound in German goods, especially tools, which are sold at marvelously low prices.

The report of Consul-General Bonham, at Calcutta, treats at length of the wheat interests of that country during the fiscal year ended March 31, 1886. The area devoted to wheat was about 27,500,000 acres, and the total yield 289,000,000 bushels. A table is annexed, showing that the export of wheat from British India has increased from 300,000 cwt. in 1866 to 21,500,000 cwt. 1886,

and that the increase of 1886 over 1885 amounts to about 5,000,000 cwt. The Consul-General does not agree with some of his predecessors who have claimed that the United States have nothing to fear from India as a competitor in the production of wheat. He fears that with the cheap native labor of India and the constantly growing facilities for transportation, the United States will find her a formidable competitor as a producer of the staff of life.

The work of raising the track and substituting steel for iron rails on the New Orleans division of the Texas and Pacific is progressing rapidly. A year ago there was not a foot of steel on this division now; 220 miles are laid with steel, and the remaining 145 miles will be laid with the same material by the end of October. Over 200 miles of steel have also been laid on the Rio Grande division, which division was also wholly of iron a year ago.

Shipping men at this port are agitating in favor of an international maritime conference, with a view of bringing about various needed reforms in the signal service, especially for the adoption of an improved plan of fog signals to be used in common by the navies of the world for preventing collisions at sea.

A large apartment house in this city, known as Holbrook Hall, was condemned by the Department of Buildings and ordered to be torn down, all the floor beams being unsound as the result of an effort to make them fire-proof. The beams were laid side by side, as closely together as possible, and were fastened with iron bolts. A thick covering of cement was applied both above and below. It is believed that the timbers absorbed the moisture of the cement and rotted.

The long anticipated Baltimore and Ohio deal was consummated 6th inst. by the signing of a contract by Messrs. J. Pierpont Morgan and Norvin Green, representing respectively the Baltimore and Ohio syndicate and Western Union Telegraph Company, which was followed by a transfer of Baltimore and Ohio stock and a general settlement of the business. The terms of the contract provide on the part of the Western Union Telegraph Company for a transfer of \$5,000,000 of its stock and a yearly rental of \$60,000. The effect of the deal on the United Lines and the Postal Telegraph Company is much discussed, and the opinion frequently expressed that these companies, which work together as one, with wires reaching across the country and to all principal cities, would be vastly more formidable with the Baltimore and Ohio Telegraph of the way. As Mr. Garrett's relations to the whole affair are not yet understood, not a few entertain doubts whether the proposed consolidation will be fully consummated. It does not yet appear whether his approval or disapproval is vital to the success of the undertaking.

The New York Chamber of Commerce passed resolutions favoring a reduction of revenue such as will make the income of the nation conform as nearly as practicable to the necessary expenditures of the nation.

Master Workman Powderly says the day has come for Knights of Labor to ask at the hands of Congress the passage of a law creating a department of labor at the seat of the National Government.

Heavy indebtedness by municipal corporations as a bar to private enterprise was touched upon by President Cleveland in his reception speech at Milwaukee: "With all its extensive public improvements," he said, "the city of Milwaukee has less of public debt than any city of its population in the United States excepting one. In these days, when the temptation to local public extravagance is not often enough withstood, you may well be proud of this exhibit; and besides the satisfaction which this financial condition produces, it has a practical side to it. Large enterprises are often much influenced in their location by such considerations, and they are apt to be established where the burden of taxation is the least and where the share of public indebtedness to be borne by them is the smallest."

Advices from the Island of Samoa are to the effect that King Malietoa has been exiled by the German naval commander in those waters, despite the protest of the British and American consuls, and regardless of the fact that the Samoan Government sustains treaty relations with the United States and Great Britain, practically recognizing the independence of the island. Tamasese is proclaimed king, protected by three German men-of-war and 1300 troops. As the United States has an exclusive right to the most valuable harbor in Samoa and the islands lie on the direct route between this country and Australia, it remains for the State Department at Washington to protect American interests recognized under the existing treaty. Secretary Bayard is reported as saying: "Our treaty guarantees us the splendid harbor and coaling station for our naval vessels, but up to the present time we have never availed ourselves of the privilege."

M. P. Grace, of W. R. Grace & Co., has received from Peru a confirmation of the press dispatch that the Peruvian Cabinet had been prevented by Chilean impediments from submitting the contract entered into

at London to the Peruvian Congress. Mr. Grace said: "This may cause delay, but Chili will have to give way. It is not a question as to Chili's supposed right to interfere that will be considered. The bonds are held in England, France and Germany, and those countries will unite in enforcing the contract, especially when Peru is willing to carry it out. Chili will not have to deal with Peru, but with the three great powers just named."

The Clyde shipbuilding yards are just now in a very depressed condition. There is not a single ship on the stocks in four of the yards—a condition of affairs which has not been known for more than a quarter of a century. It is to be hoped that the Clyde is not going the way of the Thames as a shipbuilding center.

Conveying messages by pneumatic tubes has become a business widely extended in the city of Paris, there being now in use fully 110 miles of metallic tubing within the line of fortifications. The iron tubes are from 16 to 20 feet long, jointed with flanges and bolts. The interior diameter of the tubes is 2 1/4 inches. The curves have radii of from 30 to 160 feet. The proportion of curves to straight parts in the whole network is about one seventh. The tubes are laid in the ground at an average depth of 3 1/2 feet, and wherever available the galleries of the sewers are used and the tubes laid on brackets along the walls, so that they are always accessible. As a rule, the tubes follow the level of the streets.

The new steel cruiser to be constructed in the Brooklyn Navy Yard is to be 325 feet in length and 57 feet beam. That is about all that is known of it yet at the yard, as the plans and particulars have not yet been sent from Washington.

The Piedmont Exposition at Atlanta, Ga., was opened on Monday, when the machinery was started simultaneously with the booming of cannon, after speeches by Samuel J. Randall and Governor Gordon. A correspondent says: The exhibition is not noticeable in that it is a display of Southern mineral and agricultural wealth, but that such prominence is given to Southern manufactures. In one section there were seen huge blocks of manganese from Georgia and Alabama, coal from Tennessee and Georgia, marble slabs from the Cherokee region, gold from the Dahlonega country, phosphates from South Carolina, and, in fact, every valuable deposit which has its home in some part of the Piedmont country. A look at this display gives some idea of the wealth of raw material throughout the country and suggests the workshop the South should be. Across the wide avenue in Machinery Hall the visitor is soon convinced that the workshop is already here. Cotton gins, farming mills, plows, furniture, articles in marble, terra-cotta work—all from establishments located in the South—speak volumes for the skill and handiwork of the Southern mechanic.

The Treasury Department has again decided that the failure of an importer to lodge proof to ascertain damage within 10 days after the landing of the goods is fatal to a claim for damage allowance, notwithstanding the alleged failure of the appraiser at the time of examination of the goods to notice their damaged condition.

The National Board of Steam Navigation, at their session in this city last week, were attended by about 30 members. Fifty more names were added to the list, making a total of about 300. Resolutions were adopted in favor of the Interstate Commerce law and in relation to the advancement of the general interests of the mercantile marine.

Frederick H. Abeel, a well-known iron merchant, and for 20 years a member of the firm of Abeel Brothers, No. 190 South street, died, 7th inst., at his late residence, the Branton House. The deceased was born 40 years ago at No. 127 Second avenue, where his father still resides. Mr. Abeel was a member of the St. Nicholas Society for many years.

The business of Savannah during the month of September was unprecedented. There were received over 167,000 bales of cotton. The value of two days' exports was about \$1,500,000, and the amount of tonnage now there is the largest ever known at any period of the year. Thirty steamships were in port loading on one day.

A recent feature of the railroad business of Indiana, Illinois and neighboring States has been the coal traffic. A number of railroads have been constructed to secure a portion of this business; and competition among the various lines and their numerous extensions has served to keep them pretty steady in public notice. The block coal trade is the most important of Indiana's coal business. The west-central portion of the State is the most promising one for the traffic, which has also received the greatest development in the country surrounding the cities of Indianapolis, Terra Haute, Danville, Logansport, &c.

The American Shipping and Industrial League convenes in Boston, October 21, to promote the development and distribution of the products of American labor by an extension of the merchant marine of the United States, and to establish thereby more intimate commercial intercourse with other countries by frequent and direct American mail service.

Trade Report.

British Iron and Metal Markets.

[Special Cable Dispatch to The Iron Age.]

LONDON, WEDNESDAY, October 12, 1887.

Scotch Pig.—The market is weaker. Scotch warrants are 40/1, against 41/1 last week. Makers' brands are quoted as under:

Coltness, alongside, Glasgow	52/6
Langloan	48/6
Glenarnock	47/6
Gartsherrie	47/6
Shotts	47/6
Dalmellington	47/6
Carnbroe	43/6
Eglington	42/6
Summerlee	40/6

Carriage from Ardrossan to Glasgow is 1/4 ton.

Bessemer Pig.—The market is not so steady. We quote W. C. Hematites, Nos. 1, 2 and 3, 43/ at 44/.

Cleveland Pig.—The market is easier at the following prices: 36/ for No. 1 Foundry; 35/ for No. 2; 33/ at 33/9 for No. 3, and 32/ for No. 4 Forge.

Bessemer Blooms and Billets.—Market is unchanged. Billets are 75/ at 77/6, and Blooms, 7 1/2, are now 75/ at 77/6.

Bessemer Scrap Ends.—We quote run of mill 50/ at 52/.

Manufactured Iron.—The market is a little steadier. We quote:

Staff, Ord. Marked Bars	6 0 0 @ 6 10 0
Medium " "	5 0 0 @ 5 10 0
Common " "	4 15 0 @ 5 0 0
Hoops, 20 W. G. and over	5 0 0 @ 5 10 0
Common Best	5 0 0 @ 5 10 0
Medium " "	5 0 0 @ 5 10 0
Common " "	5 0 0 @ 5 10 0
Sheets, 20 W. G. and under	6 10 0 @ 7 0 0
Ordinary Best	5 15 0 @ 6 0 0
Common " "	5 15 0 @ 6 0 0

Welsh Bars are quoted 44/ 5/.

Steel Rails.—The market is unchanged, with quotations at 44/ at 44/ 5/.

Old Rails.—The market for Old Rails is unchanged. We quote nominally T's, c.i.f. New York, 65/ at 67/6 and Double-Heads 67/6.

Scrap.—We quote Heavy Wrought, c.i.f. New York, 60/ at 62/6.

Copper.—The market is unchanged. Chili Bars closing £39. 10/ at £40, and Best Selected £44. 10/ at £45.

Tin.—Tin is firmer. Straits spot, £106. 10/ at £107; Futures, £105. 10/ at £106.

Tin Plates.—The market is a little weaker. We quote:

Tin Plates, 10x14, 1st qual. Charcoal	16/6 @ 17/6
" " 2d " "	14/6 @ 16/6
" " 1st " Coke	14/6 @ 15/6
" " 2d " "	13/6 @ 14/6

Lead.—We quote Common English £12. 2/6.

Spelter.—The market is higher. We quote £15. 12/6 at £15. 15/.

Freight.—Freights from Glasgow to New York are £5. 6/ at 6/.

Financial.

OFFICE OF THE IRON AGE, 1
WEDNESDAY EVENING, October 12, 1887.

The money market has undergone little change during the week. Time loans rule at 6% on first-class collaterals, and as low as 5 1/2% in exceptional cases. Rates for commercial paper are still nominal, although there is an easier feeling. Some four months' paper sold at 5 1/2%, which is the lowest rate for several months. Dr. Marshall, Secretary of the American Bankers' Association, has endeavored to learn what bankers think of the commercial situation, and finds there is much to encourage a belief in the future prosperity of the country. There is no imminent danger now threatening, and if bankers could devise some sort of check to speculation in the grain trade, stocks, and real estate, great benefits might ensue. It is gratifying, he remarks, to note that banks are adding to their capital and surplus. Another point is, that there have been no bad failures as compared with the prosperity of the country at large, and the calamity in each instance has been kept within a narrow circle; the effect has not been widespread. In the conservative principles which thus restrict the limits there is cause for much satisfaction. As tending to allay apprehension reference may be made to an official return in the Treasury Department, showing that between July 1, 1886, and October 1, 1887, a period of 15 months, the circulation increased by the large sum of over \$103,500,000. From this it appears that the withdrawal of \$34,500,000 of national bank notes has been nearly balanced by the increase in gold coin alone.

The Stock Exchange markets have been unsettled and generally lower. On Monday Western Union advanced to 79 3/4 for the second time this year under active manipulation, followed by the announcement that the agreement for the purchase of the Baltimore and Ohio telegraph line had been signed, and prices generally closed higher. On Friday there was a bear pressure, attended with efforts to realize, and the market as a whole was weak. The next day weakness was still more pronounced, and Monday brought no improvement, although Reading was strong, with transactions equal to one-

fourth of the entire trading. Lackawanna, Erie and St. Paul dropped on sharp bear attacks. On Tuesday the strength of Reading was reflected in the prices of the other Coal stocks, notably Jersey Central, and an additional impetus was given by the circulation of reports that the recalcitrant first series five interest had been bought out by parties prominently identified with the reorganization movement, which private advices confirmed. To-day Jersey Central was 1 1/4% higher on rumors that the receivership would soon be terminated.

United States bonds closed as follows:

4 1/2%, 1891, coupon	108	@	108 1/4
4%, 1907, coupon	104 1/2	@	105 1/4
U. S. Currency 6%, 1895	121	@	121
U. S. Currency 6%, 1896	123	@	123
U. S. Currency 6%, 1897	125	@	125
U. S. Currency 6%, 1898	127	@	127
U. S. Currency 6%, 1899	129	@	129

General trade is quiet, with collections slow and a sluggish return of currency from the interior, but the Clearing-House returns indicate that the volume of business is remarkably well sustained for this season of the year. The total clearings from 36 cities show a decrease of 2% compared with 1886, and a decrease of 16.5% compared with the previous week; outside of New York there is an increase of 3.4% against 1.8% for the previous week, also as compared with 1886. As a rule the markets are quiet, but firm. Coffee is firmer on a strong statistical position. Manila hemp is firm, and cordage in good demand. Cotton is easy. Wheat is in buyers' favor, prices slightly receded. Leather is in fair demand, both for export and jobbing account. India-rubber easy. Turpentine firmer, but quiet. Petroleum firm. Provisions in light demand, prices barely sustained. Sugar slightly advanced. Wool steady and quiet. Tea quiet. Tobacco firm. Ocean freights are unsatisfactory.

The value of merchandise imported at New York during the week is \$8,905,500, of which \$2,281,000 represent dry goods; and the total since January 1 is \$363,030,000, against \$335,110,000 for the corresponding period last year and \$303,219,000 in 1885. Exports are valued at \$6,286,022, making a total since January 1 of \$238,492,000, against \$248,957,000 for the same time last year and \$259,505,000 in 1885. The items include 220,300 bushels of wheat, 271,700 bushels of corn, 30,824 bales of cotton and 7,717,000 gallons of petroleum.

The statistical report of the Department of Agriculture makes the average of the seven surplus States 64.9, which is a lower condition than has ever been reported, except in 1881, and there may be a variation in the final record of 1 or 2% from 1,500,000,000 bushels. The wheat yield appears to be about 11.8 bushels, or 1/5 bushel less than last year, bringing the product nearly or quite to 450,000,000 bushels. The yield of oats is slightly below an average, or about 600,000,000 bushels.

The weekly statement of the New York City associated banks shows a decrease in reserve of \$904,350. The surplus now amounts to \$8,112,750, against \$9,017,100 this time last year. The more marked changes in the average show an increase in loans of \$3,393,200 and an increase in deposits of \$4,548,200. This expansion of loans clearly indicates the more easy condition of the general market. The influx of gold from Europe shows little abatement. According to the Custom-House report, which fails to show the heavy receipts within the last two or three days, the imports of specie at this port during the week were \$1,967,000, making a total since January 1 of \$29,042,000, as compared with \$16,768,000 for the same time last year, and the exports amounted to \$278,000, making a total of \$14,142,000 since January 1, against \$44,651,000 for the corresponding period in 1886. In Chicago the money market remains in a condition favorable both to banks and borrowers, the bulk of discounts being at 7%. In Boston the feeling is much easier, the rate at the Clearing House dropping to 5% all around, while general business paper ranges 6 1/2% at 7%. In the foreign exchange market an active inquiry enabled the drawers to enforce a further advance. All the leading bankers put up their posted rates to 4.81 and 4.85 1/2. The London Economist says the course of that market "will depend upon the financial policy of the United States Government," and that, it being impracticable under existing laws to deposit the surplus reserve with the banks, where it would be available for trade purposes, the future remains doubtful in respect of gold withdrawals from the Bank of England. The bank rate remains at 4%. The American Exchange National Bank of New York was on Tuesday designated as a government depository. The percentage of funds which depository banks may be allowed to hold upon bond securities has been increased in order to allow the banks to make profitable use of the funds. The surplus is now being utilized in this way.

A Berlin correspondent says the Imperial Bank of Germany has in its vaults \$137,500,000 in gold, and that although a stronger export of gold from Europe to America is looked for the official rate of discount will be advanced sufficiently to check any draw on the accumulation hoarded by Germany upon the first signal of alarm.

Wharton Barker, of the somewhat mythical Chinese syndicate, said the details of the organization of the scheme were being proceeded with, and that in a short time the syndicate's plans would be in such shape as to enable it to begin actual operations. 3¢ at 3.25¢.

The establishment of a corporation to be known as the Finance Company, under the laws of Pennsylvania, with a capital of \$5,000,000, is announced to be part of the scheme, the company's function being to conduct the preliminaries to the organization of the Chinese American Bank, with its valuable perquisites of coinage, railroad contracts and telegraph and telephone consolidation and construction.

NEW YORK.

American Pig.—The troubles alluded to in our last report as likely to grow out of the Coal strike are assuming a more serious shape. Some of the furnaces in the Lehigh Valley have been working very badly of late, so that the proportion of foundry grades has been cut down to unusually low figures, and there is some talk of banking. The supply of the foundry grades is coming forward so slowly that boats are lying at Perth Amboy on demurrage awaiting their turn. Gray Forge is plentiful, and there is growing pressure to sell. We note a sale last week of 1000 tons of a high-grade iron to a consumer in this vicinity at \$17 at furnace. We continue to quote No. 1 Foundry, \$20.50 at \$21.50; No. 2, \$18.50 at \$19.50, and Gray Forge, \$16.75 at \$17.50. Monthly furnace reports received to date indicate few changes in the capacity at work.

Scotch Pig.—The market is weaker. There are a good many rumors of offerings of lots at low prices, but with the exception of some lots from store and a mixed lot we can hear of no business. It is stated that the iron held by bankers is not pressing on the market. The rumored offerings of Coltness Iron at \$20, referred to by us some time since, turns out to have been a lot of Cotham, an English Iron. As a feature in the situation, it is pointed out that the recent failures of two sellers of Scotch Pig—Wheeler and Pope—tend to concentrate the business in fewer hands. Some of the lower figures named currently in the trade refer to sales for shipment. For spot lots of some brands higher figures are asked and paid. Thus Coltness, for immediate delivery, has sold at \$21.75 in round lots. We quote Coltness, \$21.50 at \$21.75; Glenarnock, \$20 at \$20.50; Dalmellington, \$19.50 at \$19.75; Summerlee, \$21 at \$21.50; Clyde, \$19.25 at \$19.50; Eglington, \$19 at \$19.25.

Bar Iron.—The market is quiet, with quotations unchanged at 1.85¢ at 1.9¢ for Common, 1.9¢ at 1.95¢ for Medium, and 2¢ at 2.25¢, on dock, for round lots.

Structural Iron.—Bridge Plates are a little easier, otherwise the market is unchanged. We quote for large quantities: Angles, 2.35¢ at 2.50¢; T's, 2.75¢ at 2.80¢; Bridge Plate, 2.3¢ at 2.5¢; Channels and Beams, 3.30¢ base, on dock.

Plates.—We quote: Common or Tank, 2.35¢ at 2.50¢; Refined, 2.50¢ at 2.60¢; Shell, 2.65¢ at 2.90¢; Flange, 3.50¢; Extra Flange, 4.25¢ at 4.50¢. For Steel Plates quotations are as follows: Tank, 2.7¢ at 2.9¢; Ship, 2.9¢ at 3¢; Shell, 2.9¢ at 3.25¢; Flange, 3.2¢ at 3.5¢, and Fire-Box, 3 1/2¢ at 4¢, on dock.

Blooms and Billets.—No business is reported, nor is there any inquiry.

Wire Rods.—Some offerings are being made, but little business has been done. We quote \$40 at \$40.50 for early delivery, which could be shaded for later delivery. From Pittsburgh comes the report of the sale of a round lot of Foreign at \$41.

Steel Rails.—Steel Rails have again declined, sales having been made for delivery in the spring of 1888 at \$34. Among them we note one lot of 8000 tons to a road in Illinois. It is stated that some of the mills contemplate proposing an entire stoppage of all the works in the country some time during the winter for a period of from four to six weeks—a step which, it is urged, would have salutary effects in more than one direction. Whether or not this proposal is to be adopted will probably be decided in a few days. Meanwhile buyers are holding off, the market closing at \$34 at \$35, according to time of delivery, some of the mills, however, naming somewhat higher prices, while buyers profess to know of lower figures down to \$33.

Old Rails.—It is reported that the holdings of a number of parties here, aggregating between 6500 and 8000 tons have been placed with Western buyers at good prices, the total given including the transaction alluded to in our last. This would reduce the stock held at this point to a comparatively small amount, which with possibly moderate quantities excepted is well held. Holders here argue that the quantities coming from American roads from now on are bound to be small, so that those consumers, notably in the West, who are not supplied for the winter months will have to depend largely upon the tidewater stock of foreign material. It is stated that \$22.50 has been offered and refused for a lot of 2000 tons of T's now in port. The market is in a position when buyers, if forced to purchase, would be compelled to pay \$22.50 for T's, which any effort to realize by holders would cause low figures to be made.

Scrap.—We quote Yard Scrap \$21 at \$23.

Rail Fastenings.—There is little demand. We quote: Spikes, 2.25¢ at 2.40¢; Angle Bars, 2.10¢ at 2.20¢; Bolts and Nuts, 3¢ at 3.25¢.

Metal Market.

Copper.—This market has been steady and firm since our last report; the amount of business transacted has, however, been only very moderate in extent, owing to disinclination on the part of holders to part with their stock. Some business has been transacted on the quiet at 10.45¢ October, and that price would be given for large lines, but only small quantities are offering at 10.55¢; November could readily be placed at 10.50¢; December at 10.60¢; but holders are asking from 10 to 15 points more. For next year buyers are willingly bidding 10 1/2¢, sellers insisting upon 11¢. The fact is the large business in Tin has drawn the attention away from Copper for the time being. News from the Calumet and Hecla is to the effect that an air c m pressor has burst, causing a loss of \$25,000. Best Selected has remained steady in London at 45.5/. Chili Bars ranged as follows: October 6, £39. 15/; October 7, £39. 17/6; October 10, £40; and yesterday and to day, £39. 15/. Messrs James Lewis & Son, Liverpool, in their monthly report of October 1, dwell on the increased consumption of Copper Wire for telegraphic purposes in England and the United States. Import of American Copper into Liverpool and South Wales during the first nine months 8937 tons Fine, against 12,032 in 1886 and 18,742 in 1885.

Tin.—There has been a very large business at advancing prices in this metal. Fully from 500 to 600 tons have changed hands in all positions. For Spot 23 1/2¢ is the price; for October 23.20¢ at 23.25¢ has been bid and refused. For new delivery from 22.80¢ to 23.15¢ has been paid for large lines; December has been taken at from 22 3/4¢ to 22.95¢, and several hundred tons January have been bought for European account at from 22.65¢ to 22.85¢, the market closing at the top. London has advanced to £106. 10/ cash, and £105. 10/ futures. The French syndicate recommended buying yesterday, and took large lines 5/ at 10/ above market quotations for 5 and 10 ton lots. In Holland Banca Tin has advanced from 63.25 guilders 1/2 50 kg, the sale price of September 29, to 65.75¢; buyers and operators for Dutch account have been picking up in this market Banca Tin sold to our dealers ex-September sale. At the Metal Exchange between calls 20 tons November sold at 23.20¢. Tin Plates.—The spot demand has slightly increased at last week's rates; oil men have moderately bought futures. Liverpool has recovered from 13/ to 13/3. We quote at the close, large lines, Siemens-Martin Steel, Charcoal Finish, \$4.70 at \$5; ditto Coke Finish, \$4.55; Terns, \$4.30 at \$4.35, and Coke, \$4.45 at \$4.60. Our market is weak at the close.

Lead.—The recovery in the market last week has been of short duration, the market receding to 4.40¢, at which some carloads have been taken, but nothing beyond them, consumers not even bidding 4.40¢ at the close, they feeling indifferent about buying large lines at that figure, so that the market closes only nominally at 4.40¢, while Chicago and St. Louis are dull at 4 1/4¢ and 4.20¢ respectively. Refined Lead may be quoted \$4.60 nominally in this market. In London there has been a rebound of 2/6, Soft Spanish now being worth £12. 2/6 and English Pig £12. 5/. Manufacturers are quoted as follows: Pipe, 7¢; Sheet, 7 1/2¢; Tin-Lined Lead Pipe, 15¢; Block-Tin Pipe, 40¢; Drop Shot, \$1.40; ditto, 5 lb., 33¢; Buck and Chilled, \$1.65; ditto, 5 lb., 38¢, all less the usual trade discount.

Spelter and Zinc.—While we have remained quiet here at \$4.55 at \$4.70 Common Domestic as to brand, the London market has not been interrupted in its upward course, but is again 2/6 better, with Silesian now coming £15. 15/1, so that the same has to be raised in quotation at New York to \$5.05. We call Bertha Refined 7 1/2¢. Sheet Zinc.—Last week the rolling mills advanced the price 2¢, and, with an active demand, we are strong here at 6 1/4¢ at 6 1/2¢ Domestic.

Antimony.—The demand here continues moderate at 7 1/2¢ Hallet and 9 1/2¢ Cookson. The former remains the same as before in London, say £36. 10/.

New York Metal Exchange.

The following sales are reported:

THURSDAY, October 6.	
40 tons Tin, January	22.70¢
10 tons Tin, December	22.80¢
FRIDAY, October 7.	
75,000 lb Copper, October	10.45¢
50,000 lb Copper, November	10.55¢
10 tons Tin, October	22.25¢
50 tons Tin, November	22.55¢
20 tons Tin, December	22.90¢
SATURDAY, October 8.	
20 tons Tin, November-December	22.95¢
25 tons Tin, January	22.75¢
75,000 lb Copper	10.45¢
MONDAY, October 10.	
50 tons Tin, December	22.85¢
10 tons Tin, January	22.70¢
TUESDAY, October 11.	
10 tons Tin, January	22.70¢
50 tons Tin, January	22.80¢
70 tons Tin, November	22.10¢
20 tons Tin, December	22.95¢
WEDNESDAY, October 12.	
20 tons Tin, November	22.80¢

Philadelphia.

Office of The Iron Age, 230 South Fourth St., PHILADELPHIA, Pa., October 11, 1887.

Pig Iron.—The feeling throughout the week has been one of extreme dullness, with something approaching weakness in certain directions. Prices cannot be called lower, although the feeling tends that way, and it

is difficult to effect anything like a good sized sale without conceding something in buyer's favor. It is not every seller that will do this, as some are close sold up and have a steady outlet for their product, but there are others (not a few, either), who see their stocks increasing with no indications of a better market in the near future, so that they are naturally anxious to get bids, which creates an uneasy feeling, and leads many to think that prices are bound to work lower. This feeling is in a measure confirmed by the gloomy reports from nearly all the great financial centers, although so far as the volume of business in the iron trade is concerned there is no cause for complaint. Then the fact that prices are in many cases not beyond the actual cost of production is another serious consideration, so that a few cents per ton decline will be in many cases just so much dead loss. The chance of improvement seems to be so small that it is hardly taken into account, the question being whether it is best "to blow out" at once or to risk the market a while longer. A decline of 50¢ to \$1 1/2 ton would certainly stop work at a great many furnaces, and as stocks of Pig Iron are not heavy it is questionable whether prices would stay down unless consumption falls off more than seems warranted by present indications. In fact, the position is so complicated that no one appears to have any decided opinion as to the outcome, so that in the meantime buying is of a hand-to-mouth character, and probably will be so until something definite turns up on which to base operations for the future. Prices ruling have been from \$20.50 to \$21 at tide for standard No 1 Foundry, \$19 for No. 2 and \$17 at \$17.25 for Gray Forge. In some cases even inside prices could be shaded, but there is no disposition to bid for anything not fully up to standard quality.

Foreign Iron.—Nothing doing, prices purely nominal at about \$20 at \$21, c.i.f., duty paid, for Bessemer (the latter special brands), and \$26.75 at \$27.25 for 20% Spiegel.

Blooms.—Business very dull, with free offerings at about the following quotations, say \$30.50 at \$31.50 for Nail Slabs; \$31.50 at \$32.50 for Sheet-Iron Billets, \$35 at \$36 for Siemens-Martin. Domestic Blooms as follows: Charcoal Blooms, \$53 at \$54; Runout Anthracite, \$45 at \$46; Scrap Blooms, \$38 at \$39 "bloom" ton.

Muck Bars.—Demand slow and prices irregular, with sales chiefly at \$30.50 at \$31 at mill, price varying according to quality and location of mill.

Bar Iron.—There is no particular change to notice in this department, everything moving about as it did a week ago. Mills are busy, and are likely to remain so for the present, although there is not quite as strong a tone as could be desired. In the majority of cases last week's prices have been maintained, but competition for good-sized orders is closer than it was a little while ago, and in spots prices have been shaded just a trifle. Some say requirements as to quality are not quite so stringent, and that an inferior grade of iron is being substituted, but, however that may be, buyers are all on the lookout for concessions. Some of the best makes are still held at 2.1¢, but the bulk of the demand is met with iron at 2¢, and in some cases a slight shading on that figure. Skelp Iron is in demand, with sellers at 2¢ for grooved, and plenty of demand at 1.95¢ at 1.97 1/2¢; the only sales reported were at 2¢, delivered.

Plate and Tank Iron.—The demand is fair, and without being specially active the mills are kept full of work. There is more competition for business, however, and prices are easy at quoted rates, and might possibly be shaded a little on offers for good-sized lots. Taking all things into consideration, the position ought to be satisfactory to manufacturers, while the outlook seems to be quite as favorable as usual at this season of the year. Quotations are about as follows: Ordinary Plate, 2.40¢; Tank, 2.45¢ at 2.50¢; Shell, 2.6¢ at 2.7¢; Flange, 3.5¢; Fire Box, 4¢; Steel Plates, Tank, 2.8¢; Shell, 3¢ at 3.2¢; Flange, 3.3¢ at 3.4¢; Fire-Box, 3 1/2¢ at 4¢.

Structural Iron.—There is very little change to report from last week, mills being crowded with work, which is likely to last them all through the winter. New business is not active at present, but there is a good deal of work in sight, so manufacturers feel confident of their position. Prices are steady as last quoted, viz.: 2.4¢ at 2.5¢ for Bridge Plate; 2.4¢ for Angles; 2.8¢ at 2.9¢ for Tees and 3.3¢ for Beams and Channels.

Sheet Iron.—The demand has fallen away considerably within the past few days, but stocks have been reduced to small dimensions, and with a good many orders still to complete mills are likely to be busy well up to the close of the year. Prices are unchanged, and about as follows for small lots:

Best Refined, Nos. 26, 27 and 28	31¢
Best Refined, Nos. 18 to 25	30¢
Common, 4¢ less than the above	
Best Bloom Sheets, Nos. 26 to 28	41¢
Best Bloom Sheets, Nos. 22 to 25	40¢
Best Bloom Sheets, Nos. 16 to 21	39¢
Blue Annealed	38¢
Best Bloom, Galvanized, discount	60¢
Common, discount	65¢

Steel Rails.—Very little business has been reported of late, but there are a good many inquiries from large buyers. Prices have not been arranged, however, so as to lead to business, and it is hard to say what the outcome will be. Mills are full for Octo-

Trade Report.

ber and November, with some orders for December, but for that month and January there is little doubt that buyers could make favorable terms—probably \$34 @ \$34.50 at mill. For later dates \$35 is mentioned as an inside figure, but there is nothing definite, and much will depend on the condition of the money market.

Old Rails.—The market continues dull and unsettled, but without any material change in prices. Sales during the week have been chiefly at \$22.50, f.o.b. cars here, and a mixed lot of T's and Bridges at \$23. f.o.b. cars Baltimore. Buyers could be found to-day at \$22, f.o.b. cars here, for October deliveries, but holders ask that for lots "ex-ship" to arrive, without much urgency on either side. A sale of T's was made here to-day at \$22 ex-store New York.

Scrap Iron.—Small lots bring about the rates quoted herewith (cargoes, \$20 bid and \$21 asked), say: \$21 @ \$22, or for choice lots \$22.50 @ \$23. No. 2 do., \$15 @ \$16; Turnings, \$15 @ \$16; Old Car-Wheel, \$17.50 @ \$18.50; Old Steel Rails, \$20 @ \$21; Cast, Scrap, \$16 @ \$17; do. Borings, \$12 @ \$13; Old Fish Plates, \$27 @ \$28.

Wrought-Iron Pipe.—The recent advance has been fully maintained, and as orders are coming in very rapidly, pushing the mills to their entire capacity, the prospect for the coming winter is somewhat brighter. Discounts remain as last quoted, viz: Lap Welded Black, 55%; Lap Welded Galvanized, 45%; Butt Welded Black, 45%; Butt Welded Galvanized, 35%; Boiler Tubes, 45%.

Nails.—There is but little doing in this department. The season of the year when sales usually drop off is fast approaching, and to secure orders jobbers are inclined to shade prices, causing a general feeling of weakness to pervade this branch of the Iron trade. Price is quoted at from \$2.10 to \$2.25. The latter is said to be jobbers' price, but it does not appear to be strictly adhered to. A meeting of the association is called for the 13th inst. in New York, but from what we can learn nothing but routine business will be transacted.

Pittsburgh.

Office of The Iron Age, 77 Fourth Avenue,
Pittsburgh, Pa., October 11, 1887.

In all lines of the Iron and Steel business, with the exception of the Nail trade, there is a good and regular demand, and, while competition is active, a fair margin for profit is being realized. The Nail trade, for which there appears to be no salvation, continues in an unsatisfactory condition. The Wrought-Iron Pipe interest is again in good shape; mills are all busy, and uniform prices again prevail. The indications are that river navigation, which has been suspended for over three months, will shortly be resumed, and as soon as it is general business will be greatly benefited thereby. While the condition of Pittsburgh has been wonderfully improved within the past few years in regard to railway transportation, the railroads cannot compete with the great water-ways; shipments of Iron, Nails, &c., can be made to nearly all points accessible by river West and South at a much lower rate by river than by rail, and, as a rule, it reaches its destination in better time by river than by rail. Very often when a car is loaded it is run on to a siding, and may stand there for a week or two before it is started on to its destination, whereas when a steamboat is loaded there is no delay; it is important to have the cargo delivered at the earliest possible moment. Not only is Pittsburgh interested in keeping up the great water-ways, but the same is true of all the great cities of the West and South.

Pig Iron.—Never before was the consumption in this district greater than at present. Nearly every mill and puddling furnace is in operation, many of them working up to their full capacity, and the quantity of Pig Iron being consumed is larger, probably, than ever before in the history of the business. However, production is also large, and consumers have no difficulty in obtaining all they want. Within the range of our quotations furnacemen would like to have \$1 1/2 ton more, as they continue to aver that there is little or no margin for profit at present prices. There has been little or no change in prices, with the exception of Bessemer Iron, which has still further declined. We quote as follows:

Neutral Gray Forge	.....	\$18.00 @ \$18.50 4 mos.
All Ore Mill	.....	19.50 @ 20.00 "
White and Mottled	.....	17.00 @ 18.00 "
Silvery Iron	.....	18.00 @ 19.00 "
No. 1 Foundry	.....	21.00 @ 21.50 "
No. 2 Foundry	.....	20.00 @ 20.50 "
No. 3 Foundry	.....	18.50 @ 19.50 "
Cold Blast Charcoal	.....	27.00 @ 30.00 "
Warm Blast Charcoal	.....	23.00 @ 26.00 "
Bessemer Iron	.....	21.00 @

The last sales of Bessemer reported were at \$21, four months, but rumors are on the street of sales having been made at still lower prices. The best brands of Neutral Gray Forge may be quoted steady at \$18, cash, at which liberal sales are being made daily.

Muck Bar.—There is a continued good demand, and the market may be quoted steady at \$31 @ \$31.50, cash, as to quality. There are but few sellers of good strong Neutral under \$31.25 @ \$31.50, cash. We can report sales of 1500 to 1800 tons at

\$31.25, cash. The inquiry is mainly for good Neutral. That of a Cold-Short tendency can be had at \$31, cash, but it is more difficult to dispose of at \$31, cash, than the former at \$31.50, cash.

Manufactured Iron.—There is a continued good demand for nearly all kinds of Finished Iron, and prices are still quoted steady upon a basis of 1.90¢ @ 2¢ for Bars, 60 days, 2¢ off for cash; Plate Iron, 2.40¢ @ 2.45¢; No. 24 Sheet, 2.90¢. Mills running on Skelp or Pipe Iron are very busy, some of them unable to supply it as fast as wanted. October is always a busy month with the Pipe mills.

Nails.—There is no improvement to note in the demand, and business continues dull and unsatisfactory, with but little prospect of any improvement. There is an occasional order for a round lot, but it is generally placed elsewhere, if at all, and the demand is chiefly for small lots, buyers for some reason or other not being disposed to go beyond immediate actual wants. It appears strange that, while almost all other departments of the Iron trade are in a flourishing condition, Nails should be an exception, but such is the case. Prices remain unchanged at \$2, 60 days, 2¢ off for cash.

Wrought-Iron Pipe.—The meeting of the Wrought-Iron Pipe manufacturers took place in this city on Wednesday of last week, but, as intimated in our last report, there was nothing done of interest to the general public, excepting to reaffirm the prices agreed upon a couple of weeks before. There was no advance, as reported by some of the daily papers. The Pipe trade, therefore, is again in good working condition. Present prices, so far as we can learn, are being faithfully adhered to, and mills here, and the same is no doubt true elsewhere, are very busy and will have all they can do for some time yet. The consumption of large size Pipe is fully up to what it was a year ago. Discounts are now as follows: On Black Butt-Welded, 50%; on Galvanized do., 40%; on Black Lap-Welded, 60%; on Galvanized do., 45%; Casing, all sizes, 50%; Boiler Tubes, 57%; 8-inch Drive Pipe, \$1.40 per foot, net; 2-inch Tubing, 13¢ per foot, net.

Billets, &c.—Bessemer Steel Billets are quoted at \$31.50 @ \$32.50 as to size, quality, delivery, &c. Nail Slabs continue neglected, owing to the continued depression of the Nail trade, and consumers allege that Slabs are still much too high as compared with the price of Nails. The former may be quoted at \$31 @ \$31.25, cash. Crop Ends (American) are quotable at \$21.50 @ \$22, and Bloom Ends at \$21 @ \$21.25. Wire Rods (American), sales reported at \$45.

Old Rails.—Bessemer here continues quiet and prices remain unchanged; sale of American Tees at \$26, and Foreign at \$25.25, both cash. Foreign Tees are quotable at \$25 @ \$25.25, and Double Heads at \$25.50 @ \$26.25. The stock of American is steadily being reduced and they will soon be a thing of the past.

Steel Rails.—There is but comparatively little new business, and it is intimated that some furnaces are anxious for contracts for winter delivery. Prices are weak for the delivery in question; may be quoted, nominally, at \$36 @ \$37, cash, on cars at mill. It is said that some railroads are asking to have their orders canceled, while others, not being ready, are wanting the time for delivery extended until next spring and summer.

Railway Track Supplies.—There is a continued good demand for almost everything in this line, and prices are steady. Spikes, 2.60¢, 30 days, delivered. The meeting of Spike manufacturers, it is understood, is fixed to take place in New York on the 24th inst. Splice Bars, 2.10¢ @ 2.20¢; Track Bolts, 3.30¢ with Square and 3.40¢ with Hexagon Nuts.

Old Material.—There is a fair demand, and prices as a rule are steady, although the inquiry is chiefly for small lots. No. 1 Wrought Scrap, \$21 @ \$22, net ton; Wrought Turnings, \$15.50 @ \$16.50; Car Axles, \$27 @ \$28; Cast Borings, \$13 @ \$13.25, gross; Old Car-Wheels, \$21 @ \$21.50; sale 200 tons Old Rails at \$13.50; Open Hearth Steel, \$21 @ \$22, gross.

Chicago.

Office of The Iron Age, 95 and 97 Washington St.,
Chicago, October 10, 1887.

The trade of the past week was somewhat curtailed by the intervention of the holidays attendant upon the President's visit to this section. All kinds of business were wholly suspended in this city for one day, but the preparations for the celebration of that day consumed more or less time during the days immediately preceding it.

Pig Iron.—The demand for small lots keeps the market active. Occasional sales of larger lots, ranging from 100 to 500 tons, are made, but buyers generally are not disposed to anticipate their wants. Much inconvenience is experienced from this practice, as it is not possible, with the present light stocks at furnaces, to fill orders with sufficient promptness to meet the necessities of foundries running on less than a week's supply. Telegraphing is the order of the day, but buyers seem to overlook the fact that their Iron must be shipped by rail or water and not by wire. Furnace agents located here have for some time been endeavoring to secure a stock of Iron in yards rented for the purpose, with the view of

meeting the requirements of the "pick-up" trade, but as long as present conditions prevail they will be unable to do so. Prices continue about as last quoted, concessions being unusual except on Hocking Valley Coke Iron, which has been forced on the market at \$1 under the price of Coke Iron from other districts. An effort is being made by the Charcoal Pig Iron makers to organize an association for the benefit of their branch of the Iron trade. A preliminary meeting was held at Cleveland on the 5th inst., which adjourned to meet at Detroit on the 19th. It was well attended by representatives of the Lake Superior district. Cash quotations continue as follows, f.o.b. Chicago: Lake Superior Charcoal, Nos. 1, 2 and 3, \$22 @ \$23; Alabama Car-Wheel, \$27; Tennessee Car-Wheel, \$23.50 @ \$24.50; Tennessee Charcoal Foundry, No. 1, \$22.50 @ \$23.50; Missouri Charcoal, No. 2, \$22.50; Jackson County Softeners, No. 1, \$22 @ \$22.50; American Scotch, No. 1, \$22.75 @ \$23; Straight Coke Foundry, No. 1, \$22.25 @ \$22.50; No. 2, \$21.25 @ \$21.50; Anthracite Foundry, No. 1, \$22 @ \$23; Coke Bessemer, run of furnace, \$22.50; Southern Coke, No. 2, \$21.25 @ \$22.

Bar Iron.—The condition of this branch of trade has changed very slightly. Orders have been small and the market is generally quiet. Quotations for Common Iron, not guaranteed, hover about 1.90¢, f.o.b. Chicago, in carload lots, concessions being made from this price on quantity. Good Muck Bar Iron is quoted at 2¢ @ 2.10¢, same delivery. Store prices now range from 2.10¢ to 2.25¢ according to quantity and quality.

Structural Iron.—Nothing new has developed in this line, the demand for both bridge and building material being reported as active as usual. Little business is in the market for the future, almost every order now being for immediate delivery, builders desiring to close up the season as rapidly as possible. Angles are still quoted at 2.55¢ @ 2.65¢, according to quantity, f.o.b. cars Chicago; Tees, 2.90¢, same delivery; Universal Plates, 2.65¢ @ 2.70¢; Beams and Channels, 3.40¢, in large lots from mill, and 1 1/2¢ to 1 3/4¢ more from store.

Plates.—Trade has been very satisfactory, both as regards mill lots and store sales. Inquiries for good quantities of Tank are in the market, and the outlook is very encouraging, although it is still difficult to get satisfactory deliveries from the mills, which are overrun with work. The stores continue to quote Nos. 10 to 14 Sheet Iron, at 3¢; Tank Iron, 2.8¢; Shell, 3 1/4¢; Steel Shell, 3 1/2¢; Flange Iron, or Steel, 4¢; Steel Firebox, 4 1/2¢.

Sheet Iron.—Manufacturers' agents report a continued steady demand for both Black and Galvanized Sheets. Although most of the mills represented here are said to be full of orders for the remainder of the year, they endeavor to crowd in more work when they are able to secure it. Black Sheets are quite firm, on a basis of 3.1¢ at mill for No. 27, but Galvanized Iron is still being offered at a concession by some agents. There is an active movement from jobbers' hands, and they state that they are unable to get deliveries as fast as they make sales. Their prices are without change.

Merchant Steel.—The market is a little more quiet than it has been, large orders now being very scarce. As the mills are pretty well filled up, however, the effect of the lull on prices is not marked. Spring Steel is perhaps the firmest on the list, but other grades of Steel are being well held, except the cheapest grades, which compete with Iron. Tool Steel is still quoted at 7 1/2¢ @ 8 1/2¢ for Ordinary and 13¢ @ 25¢ for specials; Crucible Sheet Steel, 7¢ @ 10 1/2¢, according to grade; Bessemer and Open-Hearth Machinery, 2 1/4¢ @ 3¢.

Steel Rails.—While inquiries for next year's delivery are still notably absent from the market, the demand is reviving for Rails for delivery during the remainder of this year. Orders for several thousand tons were placed last week with mills in this vicinity for delivery in October and November, and other inquiries are in the market for round lots. The ruling rate is still \$40 for standard sections.

Old Rails and Wheels.—Old Rails are quite weak, and although \$24 is asked for them it is likely that a seller would be unable to realize more than \$23.50 if he were anxious to force a sale. No transactions are reported in this immediate vicinity. Old Car-Wheels are quiet, with \$21 as a nominal quotation, and holders asking higher figures.

Barb Wire.—Business is very dull with both manufacturers and jobbers. The quotation of 3.40¢ for Painted and 4.15¢ for Galvanized, now made by jobbers, is the top of the market. From this price concessions are made according to the size of the order and the competition for trade in the different localities which are covered by the local jobbing houses.

Scrap Iron.—All kinds of Scrap have been moving more or less freely during the week, but no sales of large quantities have transpired. Cast is in greatest demand, but there have been some inquiries for Forge, with no special dullness in any line except in Steel, which seems to be neglected. Quotations are as follows for carefully selected Scrap 1/2 net ton of 2000 lb: Railroad Shop, or No. 1 Forge, \$21 @ \$22; Railroad Track, \$19.50 @ \$20;

Mill Iron, or No. 1 Wrought, \$16.50 @ \$17; No. 2 Wrought, Tank, Flues, &c., \$13.50 @ \$14; Light Wrought, \$10 @ \$11; Machinery Cast, \$16 @ \$16.50; Stove Plate, \$12; Cast Borings, \$10; Wrought Turnings, \$13; Coil Steel, \$16; Locomotive Tires, \$20; Horse Shoes, \$22; Axles, \$26; Leaf Steel, \$18; Mixed Country Wrought, \$15 @ \$15.50.

Nails.—The demand on manufacturers of Cut Nails is better this month than it was at any time during September. Some factories are now selling more than they were able to do previously for several months. At the same time, prices are slightly irregular, but with indications pointing to a little more firmness on the part of manufacturers, and a strong possibility that the very low prices of a year ago will not be reached. A number of manufacturers have resolved to close their mills rather than force their product on the market and compel prices to go lower. If the output is controlled in this way the price of Nails can undoubtedly not go much lower. Much will depend, however, upon the position taken by Eastern Pennsylvania manufacturers, who are at present the cheapest sellers in this market. Jobbers are experiencing a very fair demand for sorting up. They quote as their regular price \$2.10 for Iron and \$2.20 for Steel, with concessions to best buyers. Wire Nails are weaker, notwithstanding the excellent demand for them, and a large order, say for 1000 kegs or more, can be placed as low as the rates ruling two to three months ago, before the recent rise was established. Jobbers quote Wire Nails on a basis of \$3.10 @ \$3.15, according to quantity.

General Hardware.—Manufacturers' agents report their factories so crowded that they are not able to make prompt deliveries, and much difficulty is experienced in satisfying the wishes of the trade. So pressing has become the demand for stock that in some cases jobbers have placed their orders with the agents for next year's supply. The jobbing trade is universally reported to be in very excellent condition for this time of the year. The holiday in the early part of last week slightly affected business for the time, but increased activity the remainder of the week compensated largely for the time which had been lost. Collections are still excellent, and there are no discouraging symptoms in sight.

Pig Lead.—Consumers have taken about 200 tons during the week, prices rising as high as 4.30¢, but reacting to 4.25¢ at the close.

Chattanooga.

Office of The Iron Age, Carter and Ninth Sts.,
CHATTANOOGA, TENN., October 10, 1887.

General business appears to exhibit the same activity as it has for the past few months, and merchants who do a conservative trade are all doing well and making money. So far as can be observed there are no particular embarrassments in any line of trade. As a general thing collections are being made considerably closer than they used to be—that is, shorter time is being given on sales. A matter of much local interest is the advent of a new bank, with an authorized capital of \$250,000, with \$100,000 paid in. Judging from the organization of previous banks here, the entire capital will probably soon be taken. This will make the fifth banking institution of our city. All of our manufacturing institutions are running full, but are experiencing some inconvenience in getting transportation both to and from their works. The scarcity of cars with our Southern railroads is still very marked. Although they have during the year added very largely to their motive power and rolling stocks, it would seem to have had no perceptible effect in supplying the demand.

Pig Iron.—If there has been any change to note touching this article it is an increased inquiry and demand. The furnaces that are running (and there are but two or three idle for repairs) are doing their best, and are turning out their full capacity of marketable Iron. Foundry grades appear to be mostly in demand, and the furnaces that have a reputation for good Foundry Irons are sold mostly ahead, and have none to sell to outside buyers. The demand from the Southern foundries is still on the increase, and there has been some serious embarrassment in their inability to get their requirements promptly filled. There has been no advance in prices, and consumers who engage their wants ahead can generally get their supplies without difficulty.

Lumber.—This market has increased during the year in volume some 200% over previous years. Last year the amount handled ranged about 20,000,000 feet. This year it will go over 60,000,000, a large portion of which goes to Northern markets, although within the past three months several very large wood-working establishments have been erected that are working upon articles for distant shipment.

Miscellaneous.—As noted in The Iron Age some months since touching the construction of new lines of railroads, the following have been put in such financial condition that some of them are now under construction: The Chattanooga, Rome and Columbus is being rapidly graded along its entire line, and track laying will commence during the coming week. The line from Rome, Ga., to Decatur, Ala., has about 25 miles completed, and was, before the suspension of its New York bankers, being rapidly

pushed forward. It is now understood that during the coming week the bondholders will take possession of it and push it through. The extension of the Memphis and Charleston from there to Stevenson, 35 miles, will be commenced immediately and be pushed to completion as rapidly as possible. The line from there to Augusta, Ga., has much of the grading done, and while work is at present suspended it is looked upon as certain of early completion. There is now a line being laid out, between here and Murphy, N. C., which will connect with the railroad system of that State. The great object of this line appears to be to connect the Bessemer Ore fields of that district with the Coal fields of the Cumberland Range. The interests involved in this enterprise are sufficient to insure early completion.

Cincinnati.

Office of The Iron Age, Fourth and Main Sts.,
CINCINNATI, October 10, 1887.

Pig Iron.—The features which have been the most prominent during the past month or six weeks continue to be the most conspicuous points at the present moment. Manufacturers of finished Iron are well supplied with orders, but they have found the policy of running close to shore has worked so well that they adhere to the same course, buying only to meet present and pressing wants, and, while orders of this kind are numerous, they are gradually becoming smaller and smaller in amount, and as they dwindle in amount the urgency for prompt delivery increases. In some respects this mode of conducting business is unsatisfactory to producers, and it is noted by some that it is productive of an easier feeling on the part of a few furnaces which prefer to do a "wholesale" trade rather than a retail business, and are inclined to offer an inducement which will stimulate buyers and accelerate the progress of the general market. But desirable brands of Iron are said to be scarce, and with the current demand about equal to the daily production, so that any booking of contracts involving several thousand tons would really strengthen the market, although made at lower prices. This may seem paradoxical, but a contingency to which neither the buyer nor the seller can afford to be blind in consulting his interest in looking ahead. Scarcity of cars and low water in the Ohio River are still cited as drawbacks to the satisfactory prosecution of business. The money markets of the country have assumed better shapes, but there is still a disposition to remain extremely conservative, especially in discounting commercial paper. A meeting was held at Cleveland during the past week to obtain an expression of opinion of the Charcoal Iron producers relative to the formation of a protective association, and some preliminary steps were taken, the next meeting to be held at Detroit. The objective point is the fixing and maintaining of prices of Charcoal Iron on a plan which shall denote its relative value compared to Coke Iron. It is especially desired to regulate the prices of Iron made from Lake Superior Ore, although Southern furnaces were invited to co-operate. The current cash prices for Pig Iron, f.o.b. cars at Cincinnati, are as follows:

Charcoal Foundry.	
Hanging Rock, No. 1	..... 23.00 @ 24.00
Hanging Rock, No. 2	..... 22.00 @ 23.00
Southern, No. 1	..... 22.00 @ 23.00
Southern, No. 2	..... 21.00 @ 22.00
Coal and Coke Foundry.	
Ohio Soft Stonecoal, No. 1	..... 20.50 @ 21.50
Ohio Soft Stonecoal, No. 2	..... 19.50 @ 20.50
Southern Coke, No. 1	..... 20.50 @ 21.00
Southern Coke, No. 2	..... 20.00 @ 20.50
Southern Coke, No. 3	..... 19.00 @ 19.50
Ohio and West Pennsylvania Coke, No. 1	..... 21.00 @ 22.00
Ohio and West Pennsylvania Coke, No. 2	..... 20.00 @ 21.00

Forge.	
Strong Neutral Coke	..... 17.25 @ 18.00
Mottled	..... 16.00 @ 16.50
Southern Coke	..... 18.00 @ 18.50

Car-Wheel and Malleable Irons.	
Southern Car-Wheel	..... 25.00 @ 26.00
Hanging Rock, Cold Blast	..... 25.00 @ 27.00
Hanging Rock, Warm Blast	..... 24.00 @ 25.00
Lake Superior Malleable	..... 25.50 @ 26.50

Old Rails and Wheels.—There has been little demand for Old Wheels, but a fair inquiry for Old Rails, and the tone of the market has changed but little under moderate offerings at \$24.50 @ \$25 for Old Rails, and \$20.50 @ \$21 for Wheels, cash, here.

Nails.—There has continued to be a moderate jobbing trade and a steady market, rod @ 60d selling at \$2 @ \$2.15 1/2 keg, and Steel at \$2.15 @ \$2.25 1/2 keg, and other sizes at proportionate rates.

Manufactured Iron.—The foundries are well supplied with orders for Castings, and the rolling mills have a demand for Bar Iron in some cases above their capacity to meet, and a strong tone naturally prevails. We quote: Bar Iron, 2¢; Charcoal Bar Iron, 3¢; Sheet Iron, Boiled, Nos. 10 to 27, 2 1/4¢ @ 3.30¢; Sheet Iron, Charcoal, Nos. 15 to 25, 3 1/4¢ @ 4 1/2¢ 1/2 lb.

Mons. E. Cambier Dupret, the representative in Belgium of the Walrand Delattre patent, has just arranged with M. Walrand for the establishment of steel works with small converters, capable of turning out 60 tons of ingots and molded pieces per 24 hours. A second concern is La Société de la Biesme, Bouffoulx, which is building a Siemens-Martin furnace of about 6 tons capacity. The puddling industry is threatened from a fresh point almost daily, sheets, merchant sections, angles and drawn tubes being produced in ever increasing quantities in steel in place of iron.

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Trade Report.

General Hardware.

There is but little change in the condition of the Hardware market, the demand continuing good, and a trade which is generally satisfactory being done. Prices are steady. Certain lines of goods, principally in Heavy Hardware, are rather scarce, and there is some delay in filling orders. Some complaint is made that collections are slow, but many houses report little trouble on that score.

NAILS.

The New York market has been more active, agents reporting a larger volume of business, chiefly in small orders. The market is weaker, however, Iron Nails selling from store at \$2 to \$2.10. For carload lots \$2 is quite generally adhered to.

WIRE NAILS.

The condition of the New York Wire Nail market has undergone no change. There is still complaint of cutting. We quote for round lots \$2.90 to \$3 base.

BARB WIRE.

Business is light and the market remains stationary on the basis of 4.10 cents for carload lots of Four Point Galvanized Barb Wire.

MISCELLANEOUS PRICES.

The Orne Electric Outfits described on page 17, and put on the market by Bigelow & Dowse, Boston, Mass., are sold from the following list, which is subject to a discount to the trade of 20 per cent.:

Orne Electric Outfit No. 1.	
One 2½ inch Box Bell, Orne Battery, Push Button and Wire.....	\$3.00
Extra Push Button, each.....	.30
Extra Bells, each.....	1.75
Orne Electric Outfit No. 2.	
One Orne Battery, Floor Push, Wire, one 2½ inch Bell.....	\$3.50
Extra Floor Pushes, each.....	.65
Extra Bells, each.....	1.75
Orne Electric Outfit No. 3.	
One Orne Battery, one 2½ inch Bell, Wire and Door Spring Connection.....	\$8.50
Extra Door Connections, each.....	.50
Extra Bells, each.....	1.75
Orne Electric Outfit No. 4.	
One Bronze Electric Door Pull, one Orne Battery, Wire, and one 2½ inch Bell.....	\$5.00
Extra Door Pulls, each.....	2.35
Extra Bells, each.....	1.75

The sample boards, shown in Fig. 5, page 17, are sold at \$7, net.

The following is the price list of the Nut Picks and Cracks manufactured by H. M. Quackenbush, Herkimer, N. Y. It will be remembered that the No. 1½ Picks and Cracks, a size intermediate between the No. 1 and 2, have recently been added. These goods are made of Steel, chased with handsome designs and heavily Nickel-Plated. The list of the No. 1 is as follows, the discount being 40 per cent. 30 days, with a further discount of 2 per cent. for cash in 10 days:

A 1, 6 Picks only in box.....	\$1.25
B 1, 12 Picks only in box.....	2.35
C 1, 6 Picks and 1 Crack in box.....	2.00
D 1, 12 Picks and 2 Cracks in box.....	4.00
The following are the list prices of Nos. 1½ and 2, the discount on which is 40 and 10 per cent., 30 days, subject to an additional discount of 2 per cent. for cash in 10 days:	
A 1½, 6 Picks only in box.....	\$0.90
B 1½, 12 Picks only in box.....	1.75
C 1½, 6 Picks and 1 Crack in box.....	1.75
D 1½, 12 Picks and 2 Cracks in box.....	3.50
A 2, 6 Picks only in box.....	.75
B 2, 12 Picks only in box.....	1.50
C 2, 6 Picks and 1 Crack in box.....	1.50
D 2, 12 Picks and 2 Cracks in box.....	3.00

The regular monthly meeting of the National Association of Tube and Pipe Manufacturers was held at the Monongahela House, Pittsburgh, on Wednesday, the 5th inst. There are 19 members in the association, 17 of which were represented at the meeting in person, the other two being represented by proxy. After hearing a number of reports as to the condition of trade, which were generally encouraging, it was decided to make an advance in the price of Casing, 2 inch Tubing and Line Pipe. Discounts and net prices are now named as follows:

Per cent.	
Butt-Welded Black Pipe, 1½ inches and smaller.....	50
Lap-Welded Black Pipe, 1½ inches and larger.....	60
Butt-Welded Galvanized Pipe, 1½ inches and smaller.....	40
Lap-Welded Galvanized Pipe, 1½ inches and larger.....	50
Tarred Pipe, 1½ inches and smaller.....	30
Tarred Pipe, 1½ inches and larger.....	60
Well-Casing, all sizes.....	50
Lap-Welded Charcoal Iron Boiler Tubes.....	55
Lap-Welded Steel Boiler Tubes.....	40
Casing.....	50
Two-inch Tubing.....	13½ net
Line Pipe is as follows, net: 2-inch, 12 cents; 2½-inch, 14 cents; 3-inch, 21 cents; 3½-inch, 27 cents; 4-inch, 31 cents; 4½-inch, 38 cents; 5-inch, 46 cents; 6-inch, 64 cents.	

English Caps have recently been held at somewhat lower prices on account of the ruling of the Treasury Department by which the coverings are exempted from duty.

Steel Goods are held with apparent firmness at the regular prices, and the amount of business is referred to as fair, but not heavy.

The stock of Bright Chains in the hands of the manufacturers is low, and the manufacturers enter the market this season with very little stock from which to supply the large demand which is setting in, so that the indications are that this class of Chains will be somewhat scarce, and it is not unlikely that purchasers will find themselves short for goods. Prices will consequently be firm, and the probability of an advance is alluded to.

In the present condition of business, the very satisfactory demand which has prevailed and still continues, a good many lines

of goods, especially in heavy Hardware, are scarce and orders are slow in being filled. Among such goods may be mentioned Chain, Heavy Hinges, Bolts of all kinds, Crow Bars, Wedges, Axles, Springs, &c.

The market for Manila Hemp has been slightly weakened by large arrivals, and prices are not as strong as they have been for the past few weeks. No change, however, is made in quotations. The following is the manufacturers' price list:

Manila Rope, Cts. per lb.	
1¼ inch cir. and upward.....	1.35
12 thread, or ¾ inch diameter.....	1.35
6 and 9 thread, or ¼ and 5-16 diameter.....	1.35
Fine 6 thread, or 3-16.....	1.35
Bolt Rope.....	1.35
Tarred Rope.....	1.15
Lath Yarn, medium.....	1.15
Small Rope.....	
1¼ inch cir. and upward.....	1.15
12 thread, or ¾ inch diameter.....	1.15
6 and 9 thread, or ¼ and 5-16 diameter.....	1.15
Fine 6 thread, or 3-16.....	1.15
Lath Yarn, fine.....	1.15
Lath Yarn, medium.....	1.15
Lath Yarn, coarse.....	1.15
Hay and Hide Rope, medium.....	1.15
Hay and Hide Rope, fine.....	1.15

Russian Hemp.	
White Rope.....	1.14
Tarred Rope and Ratline.....	1.11
Spun Yarn.....	95¢
Holt Rope.....	1.15
Marline, Houseline, Rounding and Hambro-line.....	1.13
Packing, Hemp.....	1.13
Packing, Tow.....	1.11

American Hemp.	
White Rope.....	1.14
Tarred Rope and Ratline.....	1.11
Spun Yarn.....	95¢
Lath Yarn.....	1.11
Packing, Hemp.....	1.13
Packing, Tow.....	1.11
Marline, Houseline, Rounding and Hambro-line.....	1.13
Sash and Bell Cord.....	.25 to .35

Italian Hemp.	
White Rope.....	1.18
Packing, fine dressed.....	1.16
Packing, Hemp.....	1.16
Packing, H-m-p.....	1.14

Jute.	
Rope and Packing.....	75¢
Bed Cords and Clothes Lines.....	85¢
Oakum.	
Best Oakum.....	8
United States Navy.....	74
Navy.....	64

School Slates are higher than they have been, the advanced prices of the combination being maintained, and the goods which were in the hands of second parties having been for the greater part exhausted; 4c and 10 per cent. may be named as a regular discount.

The Bartlett Beef Tea Press, described on page 17 and manufactured by S. R. Bartlett, 20 St. John's Place, Brooklyn, N. Y., for whom the Dover Stamping Company, 111 Chambers street, New York, are agents, is designated as No. 5 in the following list of his manufactures, the discount on which is 50 per cent.:

No. 5, Round, family size, for beef tea.....	\$0.50
No. 1, Square, family size, 6 x 9 x 4 in. deep.....	1.50
No. 2, Square, family size, 8 x 12 x 3 in. deep.....	3.00

The National Association of Spring and Axle Manufacturers have recently been in conference in regard to matters of interest, and another meeting of the association will be held in the near future.

The following are the discounts of D. R. Sperry & Co., Batavia, Ill., which apply to their annual price list of 1887-88, to which we have recently referred. Terms, 90 days, a discount of 3 per cent. for cash being given if paid within 10 days:

Caldrons, page 13.....	40&5
Caldrons, in lots of 5 or more, if shipped direct from factory.....	45&5
Castings for setting Caldrons, pp. 18 and 19.....	40&5
Bakers' Oven Castings, page 21.....	40&5
Sugar Kettles, page 16.....	50
Sugar Kettles, in lots of 10 or more, if shipped direct from factory.....	55
Extra Finished Hollow-Ware, pp. 24, 25, 26, 27 and 28.....	50
Laundry Stoves, page 9.....	40
The Dairy Maid, page 10.....	40
Farm Boilers, pp. 4, 5, 6, 7 and 8.....	35
Mauls, page 21, made from the best Pig Iron; will stand severe tests breaking stone and pounding on iron.....	65
Wood-Face Mauls, page 22.....	40
Coffee Roasters, page 23.....	50&5
Bake Ovens, Improved Covers, page 22.....	50&5
Drug Mortars, page 30.....	30
Miscellaneous Goods, pp. 32, 33 and 34.....	35

The following prices have recently been announced by E. C. Meacham Arms Company, St. Louis:

Case Lots B. L. Single Guns.	
Remington System, 30 Gauge, 30 inch.....	\$6.00
Zulu, 12 Gauge.....	2.45
Springfield, 16 Gauge, 32 inch.....	5.00
Champion, 8½ Snap, 12 Gauge, at \$6.50.....	7.50
Twist, 12 Gauge.....	8.00
Champion, Top Snap, 12 Gauge, at \$7.50.....	8.00
Twist, 12 Gauge.....	8.00
Champion, Side Snap, 10 Gauge, at \$6.00.....	7.00
Twist, 10 Gauge.....	7.00
Champion Top Snap, 10 Gauge, at \$7.00.....	8.00
Twist, 10 Gauge.....	8.00
Champion, Top Snap, 10 Gauge.....	8.00
Twist, 10 Gauge.....	8.00
Champion, Top Snap, 10 Gauge.....	8.00
Twist, 10 Gauge.....	8.00

Case Lots B. L. Double Guns.	
No. F. Lefauchaux, 12 bore, at \$6.00; 10 bore.....	6.25
Bonehill, No. 28 E. 30 to 32, Choked.....	16.00
Bonehill, No. 30 E. 30 to 32, Choked, 10 bore only.....	19.00
1033, English, Side Snap, back-action, 10 and 12 Gauge.....	9.50
1180, Same Reb. P. G.....	11.00
English, Side Snap, bar action, Reb. P. G., at English Top Snap, bar action, Reb. P. G., Ex. Rb.....	15.50
International Top Snap, back-action.....	14.50

25 Revolvers.	
44 Remington Frontier Blued, Army.....	6.00
44 Remington, altered to Colt's Army.....	3.50
38 American Arms Co., single-action, Shell-Ejecting.....	8.00
38 American Arms Co., double action, Shell-Ejecting.....	5.00
100 Assorted Double-Action Plated Revolvers, S. & W. Revolvers, 2 per cent cash; Balance, net cash.....	
44 C. F. British Bull Dog, Wood, American make.....	1.35
44 C. F. British Bull Dog, Rubber, American make.....	1.45
Imported British Bull Dog, 32, 38 and 44.....	1.60
44 C. F. Ajax Army, 6 in., Rubber.....	2.00
32 and 38 X L Bull Dog, Regular Hammer.....	1.20
32 and 38 X L Bull Dog, Folding Hammer.....	2.20
38 Smith & Wesson Hammerless.....	11.40
32, 38 and 44 F. & W. British Bull Dog, Rubber and Reb'dg.....	1.80

25 Lots of Army Revolvers.	
45 Bull Blue, "U. S." stamped on each, 7½ inch barrel, Government Finish, perfectly new, \$8; Plated.....	8.50
Case Lots Double M. L. Guns.	
No. 1940, Twist, Back-Action, English.....	5.75
No. 1941, Fine Twist, Bar Locks, English.....	6.25
Bore, 11 to 13; Length, 32 to 33.	

Case Lots Single M. L. Guns.	
No. 3, Davis System, 32 to 34 inch.....	2.75
Model 42 Smooth Bored Muskets.....	1.40
Model 42 Cut Down Muskets at \$1.60; Model 42, Blued.....	2.00

Flintlock Rifles, Case Lots.	
No. 305.....	at \$1.65
No. 13394.....	at 2.30
No. 1304.....	at 2.85
No. 1389.....	at \$2.85
No. 13304, 32 Cal.....	3.25

Will Sell in Case Lots as follows, net:	
10 Spencer Repeating Shot Guns.....	at \$25.00
30 Springfield Military Rifles, 50-70, with Bayonet.....	5.00
30 Springfield 45-70 Military Rifles, with Bayonet.....	6.00
20 Springfield Cadet Rifles, 45-70, with Bayonet.....	4.00
10 Quackenbush 32 Cal. Safety Rifles.....	7.50
50 Quackenbush 32 Cal. Safety Rifles.....	9.00
10 Sharp's Sporting Rifles, 74 Model, 45-70, 30 in., Oct. D. T.....	4.40
20 Sharp's Hammerless Military, 45-70.....	8.50

1000 Bag Lots Patent Shot, net cash.....	at \$1.20
Patent Shot, 80 bag lots, net cash.....	1.25
Buck and Child's 80 bags, net cash.....	1.47
(Shot no dragage.)	

Toy and Climax Fuse.	
Barrel lots, 17½, 2 Cash.	
Hemp, per M.....	\$2.70
Single Tape, per M.....	6.00
Double Tape, per M.....	4.75
Triple Tape, per M.....	7.25

Sundries.—Winchester Wads.	
Cash, 2 per cent.	
No. 8, Black Edge.....	Per doz.
No. 9 or 10, Black Edge.....	\$2.08
Nos. 11 to 20, Black Edge.....	1.84
Pink Edge.....	3.92
Pink Edge.....	3.92
Pink Edge.....	3.92
50 M Lot Single Force Primers.....	3.50
25 M Lot Triple Force Primers, Ajax or Silver Medal.....	4.50
50 M Lot of either.....	4.25
25 M Lot Triple Force Gold Medal Primers.....	6.00
50 M Lot.....	5.75
10 M Lot American Miners' Squibs.....	1.35
100 M Lot American Miners' Squibs.....	1.35

Gun Caps.—100 M Lots.	
Cash, 2 per cent.	
F. C. & E. C. M. London Center Fire, Water-proof.....	.38
U. M. C. Ground Edge, (center Fire, Water-proof.....	.46
Musket, Tin Boxes, W. F.....	.50
21 M Lot, Eley's 2½ cent. Nitro-Glycerine.....	.55
Dynamite No. 1, 75 per cent. Nitro-Glycerine.....	.36
Dynamite No. 1½, 60 per cent. Nitro-Glycerine.....	.32
Dynamite No. 2, 50 per cent. Nitro-Glycerine.....	.28
Dynamite No. 2, 40 per cent. Nitro-Glycerine.....	.24

Discount, 500 lbs. or less, 15 per cent.	
Discount, 1000 lb. lots, 25 per cent. 5000 lbs. lots, 25 and 10 per cent.	
1000 Lots Loaded Waterproof Rival Shells.....	Net.
No. A, 1 Gauge, 3½ Drams Powder, 1½ oz.....	\$15.00
No. 4, 5, 6, 7, 8 Shot, per M.....	16.50
No. 10 Gauge, 4½ Drams Powder, 1½ oz.....	16.00
No. 4, 5, 6, 7, 8 Shot, per M.....	17.50
No. 12 Gauge, 3½ Drams Duck Powder, 1½ oz.....	16.00
No. 10 Gauge, 4½ Drams Duck Powder, 1½ oz.....	17.50
No. 4, 5, 6, 7, 8 Shot, per M.....	17.50

A and B, one black two card Wads over Powder, one card over Shot.....	
C and D, two black two card Wads over Powder, one card over Shot.....	
Packed 25 in a box, 500 in case. Sold in case lots only.	

Each box has the name of the Winchester Repeating Arms Company.	
Obituary.	

Henry Folsom, of the firm of H. & D. Folsom, importers and dealers in Firearms, 15 Murray street, New York, died in this city on Monday evening. Mr. Folsom was born in Chester, N. H., about 58 years ago, and when quite a young man went to St. Louis, and, engaging in business as dealer in Firearms, built up a large and successful trade. He extended this by establishing branch houses in Memphis, New Orleans, Chicago and New York. He subsequently removed to this city, where he has been the head of the firm with which he was connected, which at the present time have branch houses in New Orleans and St. Louis. While Mr. Folsom lived part of the time in this city, his principal residence was in Orange, N. J., of which place he was a well-known and highly esteemed citizen, active in the promotion of religious and philanthropic enterprises. He was held in great respect by the trade, who recognized his business abilities and his high character. His death was not unexpected, as he had been in seriously impaired health for some time.

The following resolutions relative to the death of Frederick Wiebusch were passed at a meeting of the Hardware Board of Trade, of this city, held in their rooms on Friday last:

Whereas, We have learned with profound sorrow of the decease of Mr. Frederick Wiebusch, for some 20 years past associated with us in this city in business, where he has occupied a prominent and influential position, and,

Whereas, We have always found him one of our leading merchants, among the first to suggest and carry out all matters of benefit and improvement to the trade in its various branches; and,

Whereas, It is deemed proper and fitting that tribute should be paid to his virtues and sterling business qualifications; it is therefore,

Resolved, That in this affliction we feel the loss of an excellent merchant, a most genial and accomplished friend, a sound counselor and a prudent adviser, and we shall miss his leadership in matters where great capabilities are required, as well as in beneficent charities.

Resolved, That we extend our heartfelt sympathy to his family, and that a copy of these resolutions be submitted to them.

Reference was made in these columns several weeks ago to the death of Carl A. Fried, of the firm of Lee, Fried & Co., Omaha, Neb., of whom one who knew him intimately writes: "He was a good Hardwareman, widely known with the trade, as his manly and genial qualities and many other acts of kindness endeared him to all with whom he met or had business relations." The following resolutions expressing the esteem in which he was held were

adopted by the Mississippi and Missouri Valley Hardware Association:

Whereas, We have been called upon to record the decease of our late respected associate, Mr. Carl A. Fried, of the firm of Lee, Fried & Co., Hardware jobbers, Omaha, Neb., with whom it has been our privilege to have been associated with in the general pursuit of our mutual interests for the past several years; therefore be it

Resolved, That by his death the Mississippi and Missouri Valley Hardware Association have sustained the loss of an energetic and conservative member, whose wise counsels and thorough business views have materially aided in promoting the best interests of this association, and whose genial disposition has endeared his memory to us.

Resolved, That we tender our sympathies to his immediate business associates, whose interests he has ably and faithfully represented, and his family have our heartfelt sympathy in their sad bereavement.

Resolved, That these resolutions be spread upon the minutes of this association, and also suitably engrossed copies be sent to his family and the members of the Mississippi and Missouri Valley Hardware Association.

ITEMS.

The Ireland Mfg. Co., Cincinnati, Ohio, manufacturers of fine Builders' Hardware, announce that they have recently purchased the patterns of Shelf Hardware formerly owned and manufactured by the Perin & Gaff Mfg. Company, Jeffersonville, Ind., and they are now prepared to fill orders for this well-known line of goods promptly.

E. C. Atkins & Co., Indianapolis, Ind., issue circulars in French and German which relate to their leading Saws and Saw Tools. These circulars are sent out for the convenience of their export trade, which the company refer to as extensive and this year better than ever. The pressure of their orders requires them to run their works overtime.

Goulds & Austin, Chicago, Ill., issue a circular calling attention to the completeness of their line of Well Boring and Drilling Machinery. Well Machines are referred to as paying large profits to the operators, and it is suggested that this is a season when their customers should push sales with those who contemplate purchasing.

P. & F. Corbin, manufacturers of Hardware at New Britain, Conn., have opened a warehouse at No. 63 Washington street, Chicago, in which they propose to carry a full line of goods for the convenience of their Western customers. Wm. G. Miller and John R. Scott are the managers of the Western house. Mr. Miller has represented the firm for a number of years at No. 19 Wabash avenue, Chicago, but carried no stock of goods. Mr. Scott was recently junior partner in the firm of Kellogg, Johnson & Bliss, Hardware merchants, of Chicago. The store room which the firm have rented is capacious, well lighted, situated in the best part of the business section of Chicago, and is being fitted up very neatly. A full stock of goods, however, will not be in place for a few weeks, as the factories have been too busy on orders to attend to the requirements of the branch house in this respect. The Corbin Cabinet Lock Company will also be represented by these gentlemen, and a full stock of Cabinet and Trunk Locks will be carried in their behalf.

A neat and convenient price list has been issued by the Rome Brass and Copper Mills, for whom O. W. Graves & Co. are agents, 21 Cliff street, New York. It gives in convenient form the lists on the line of goods to which it refers.

Holroyd & Co., Waterford, N. Y., have just issued a new catalogue which exhibits in clear and convenient form the line of Stocks and Dies, Taper, Plug and Pipe Taps. Solid Die Plates, &c., of which they are manufacturers. The different styles are appropriately illustrated with excellent engravings.

John Sommer's Son, Newark, N. J., has recently issued a new catalogue representing the entire line of his manufactures. It is a pamphlet of more than 50 pages, and is noticeable as a complete and extensive exhibit of Faucets, together with a few specialties in Wooden Ware. In the introductory circular attention is called to the fact that this house is the oldest established Faucet manufactory in the United States, while reference is made to the value of his experience, and the care and skill exercised in the manufacture of the goods, while the favor which they have received is appropriately acknowledged. Beside the illustrations of the many Faucets made and the list prices, the catalogue gives the number of dozen of each size contained in barrels, and also gives information in regard to the manner in which the goods are put up in boxes. A separate circular is also issued relating to the Peerless Faucets, of which the special features are explained.

The Murray Iron Works Company, Burlington, Iowa, in their 1887 catalogue, give a full description of their line of special machinery for butchers and packers. They allude to the fact that it has not been their custom of late to publish testimonials, but in this case they give a few relating to the Stallman Stuffer and the Iowa Noiseless Cutter, because these machines are new, and also of the Improved Draw Cut Choppers, which they regard, on account of the changes made this year, as practically new machines. The catalogue, which is fully illustrated and contains much descriptive matter, makes a satisfactory exhibit of the extensive line of machines made by the company.

Paine, Diehl & Co., Philadelphia, Pa., have recently put on the

We could have sent this package by express for 25 cents, but in order to insure prompt delivery forwarded it through the mails under the impression that it would go through the same as thousands of other merchandise packages which we have sent through the mails. We were greatly sur-

Fittings, Iron, Pipe, in bundles, wired..	D1	..
Glass, Window, 14 x 16 inches and under.....	3	4

being pretty well understood even by the most unsophisticated that Smith & Brown did not actually make the Knives themselves but simply had an arrangement for the marking of the goods. In the same way Mr. Nimrod, the local vendor of Guns, Rifles and Ammunition, has had his name placed on the weapons he has dispensed of, but probably has never been even remotely suspected of possessing the machinery, plant, and men necessary to turn out even the poorest of the arms in his shop. In his other trades a similar custom has obtained, and local tradesmen have secured a certain amount of good advertising, and possibly a fair measure of solid satisfaction, by thus looming largely in the eyes of their local public. It is not to be disputed, either, that the practice may have had its advantages in the shape of a sort of warranty or indorsement by a local firm, well known to the buyers, instead of the names of distant manufacturers, probably totally unknown to the persons dealing with the retailers. The new act appears to be likely to put a stop to all practices of this kind; we say "appear," because there is considerable doubt even among experts and those who had a good deal to do with the preparation of the act as to what is and is not permissible in this respect. In some quarters it is held that goods cannot be so marked, while others contend that, there being no "intent to deceive" within the meaning of the act, the marking may go on as before. Meantime, the uncertainty is not only annoying to both manufacturers and tradesmen, but is causing a loss of business, which should be remedied as early as possible. How that remedy is to be found out and applied it is not for us to suggest, further than that we think that a cheap and reasonable course would be to raise a friendly action at law, in order to obtain an authoritative decision. This might be done by the Cutlers' Company, of Sheffield, in a clear and distinct manner, and, probably, without much delay. While thus putting forward a suggestion, however, we are bound to state that as we read the act there is little doubt of the illegality of this kind of marking, under section 3, and its sub-sections. Sub-section 2 of section 3, for instance, provides for "false trade descriptions," which "would be reasonably calculated to lead persons to believe that the goods are the manufacture or merchandise of some person other than the person whose manufacture or merchandise they really are." Other sections of the Act somewhat qualify the above, and some of them make it tolerably clear that if the makers' names were stamped there would be no illegality in adding the names and addresses of the vendors. That arrangement would scarcely suit the retailers, however, so that the probabilities are that the practice of marking Cutlery, &c., in this manner will have to be abandoned. As an aid to the proper consideration of the issue, and bearing in mind the fact that the act was principally owing to the action of the Sheffield Cutlers' Company, we think it advisable to reproduce the following from the official report of the evidence given by Mr. Lockwood, the late Master Cutler, before the Select Parliamentary Committee:—"Question 272, asked by Mr. Stuart-Wortley.—Is it your opinion, from your experience in the Sheffield trade, that it is desirable to prohibit the practice of putting the dealer's name upon articles such as Cutlery, standing by itself—for instance, the name of a London dealer standing by itself upon articles of Sheffield Cutlery; do you think it desirable that legislation should be so framed as to stop that? It is taking a very big jump; that is my feeling. But do you think that it would be for the interest of the Sheffield manufacturing trade (and I emphasize the word 'manufacturing') that that practice should be stopped? All large manufacturers in Sheffield would hold up their hands for it; on the other hand, the smaller they get the more they would object; their business is quite wiped out if they are not allowed to mark other names. You claim that goods finished in Sheffield should be marked 'Sheffield.' That is your wish, is it not, speaking in the interest of the Sheffield manufacturing trade? We must do something of the kind, because it is so hard to draw the line. That difficulty of drawing the line has existed ever since the act of 1862, has it not? Yes. The words are the same! Yes. In the Act of 1862 and the present bill, I mean? As to place of origin in both." Of similar purport was a clause which the Cutlers' Company submitted to the Board of Trade with the suggestion that it should be added to the bill. That clause ran as follows:—"From and after the passing of this act no person shall apply, or cause or procure to be applied, to any goods or to any covering, reel, label, ticket, or other thing in or to which such goods are placed, inclosed or annexed the name of a place or country, unless such goods shall have actually been made or produced in such place or country; and that notwithstanding that the name of such place or country may form part of the registered trade mark of such persons." Judging from these extracts it would appear that the intention of the "parents," so to speak, of the act was to put a stop to the practice of marking the names of persons other than those of the actual makers. That being the case, it is obvious that until a judicial decision has been obtained on the point manufacturers and retailers, as well as merchants, will do well to avoid all risks in the matter.

ARRANGEMENT OF HARDWARE STORES.

The following letter from a New England Hardwareman, relating to the use he has made of the series of articles we have published in regard to the arrangement of Hardware stores, will be of interest to our readers, and suggest some matters worthy of their consideration:

Almost all of those who contributed to the discussion concerning the arrangement of Hardware stores have been wholesale merchants or large retail dealers. I should like to hear from some of the small fry doing a limited trade like myself. I occupy a store in which I can have as many repairs made as I desire, provided only that I pay

Seventeen persons killed or burned alive, and thirty persons maimed, is the result of the latest railroad horror in the West. It took place Monday night at Kouts Station, Ind., a little place 50 miles east of Chicago, on the Chicago and Atlantic Railroad, caused by telescoping and an overturned stove, the wreck being reduced to ashes.

Almost all of those who contributed to the discussion concerning the arrangement of Hardware stores have been wholesale merchants or large retail dealers. I should like to hear from some of the small fry doing a limited trade like myself. I occupy a store in which I can have as many repairs made as I desire, provided only that I pay

L. COES'
GENUINE IMPROVED
Knife Handle
PATENT
Screw Wrenches
MANUFACTURED BY
L. COES & CO.,
Worcester Mass.
ESTABLISHED IN 1839.




Patented July 6, 1886. Patent July 8, 1884.
Registered March 11, 1874.

Sectional view illustrates our NEW KNIFE HANDLE, showing Malleable Iron Frame and Shank of Bar keyed into position.
Straight Bar, Extra LONG NUT FOR SCREW IN JAW

The Best Made and Strongest Wrench in the Market
Send for Illustrated Price List and Circular.

J. C. McCARTY & CO.,
NEW YORK,
Sole Agents.

Hardware Dealers Take Notice,

and buy where you can get the best quality at the lowest price, thereby not only satisfying your customers, but also putting money in your own pocket.

Our Eureka Patent Flexible Back Saws, the teeth of which are hard, the back being soft, thereby preventing them from breaking in two, have been greatly improved and are giving the best satisfaction. Our Crescent brand of Hack Saws are hardened all through with uniform temper, and are the best Hack Saws so tempered.

We are now preparing to supply the wants of the trade according to their preference. Hardware Dealers run no risk by buying from us either our Eureka or Crescent brand of Hack Saws on our recommendation, as we give them the option of returning the first lot to us at our own expense any time within three months from date of invoice. Correspondence solicited.

Henry G. Thompson & Sons,

Cor. Elm and State St., New Haven, Conn.,

—MANUFACTURERS—

Flexible Back Band Saws for Cutting Metals,

Hack, Meat and Kitchen Saws and Frames.

SEND FOR CIRCULAR.

BRANCH OFFICE, 51 Leonard St., New York City.

JOHN W. McLELLAN, Pres. CHARLES R. FOWLER, Vice-Pres. HENRY S. LANPHER, Sec'y & Treas.

American Tin Zinc Company,
LIMITED,
85 Beaver St., New York,
Telephone Call, "PEARL 233."

Factory, SEYMOUR, CONN.

TIN ZINC,
W. J. WILDER'S PATENT, March 10th, 1885.

A New Metal especially adapted for Roofing, Lining Refrigerators, the Manufacture of Britannia Ware and all Articles where Spun Metals are Required. An excellent Substitute for Tin Copper and White Metals.

LANE'S MEASURING FAUCET.

Price, \$8.00.

or Light or Heavy Molasses, Oils, Varnishes or other Fluids.

We warrant these Faucets to be as represented, measuring correctly and working more easily in heavy molasses than any Measuring Faucet in the market. No grocer can afford to be without them, for they save time, and "time is money." They insure perfect cleanliness, requiring no tin measures or funnel to collect dirt and draw flow. They do not drip. They prevent all waste, as no molasses or other fluid can pass except when the crank is turned. They are the embodiment of simplicity, and consequently they are always in order. They work easily in the heaviest molasses. They are warranted to measure correctly, according to U. S. Standard.

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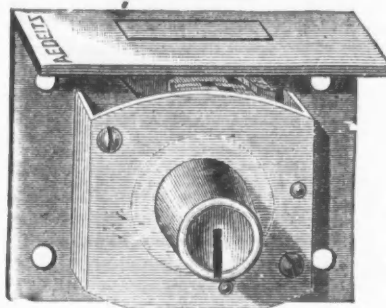
LANE BROS., Poughkeepsie, N. Y.

General Agency, JOHN H. GRAHAM & CO., 113 Chambers St., New York.



ALEXANDER BROS
BEST OAK BELTING
PHILADELPHIA.

A. E. DEITZ.



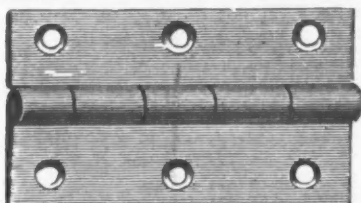
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NEW YORK.

Factory, BROOKLYN, E. D., N. Y.



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BRASS, GALVANIZED & SHIP CHANDLERY

HARDWARE.

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NEW YORK.



ALWAYS GIVES THE
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Main Belting Co.,
Manufacturers of
THE LEVIATHAN
COTTON

BELTING.

Unsurpassed for
Strength, Durability and
Cheapness.

Made to any Length,
Width and Strength

Main Driving Belts.

Guaranteed to Run
Straight, Even Through-

out.

No Cross Joints, Un-

affected by Damp-

Chills well to the Pulley,

Has no equal. In fact,

is THE BELT.

MAIN BELTING

COMPANY,

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248 East Randolph St.,

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The "Superior Wringer."

(Iron Frame.)



Fully Warranted. Has Patent Adhesive Rolls,

Best Steel Springs, Malleable Iron Crank.

Send for fully illustrated Catalogue and Price-

List of thirty different styles and sizes of Wringers.

BAILEY WRINGING MACHINE CO.

WOONSOCKET, R. I.

Non-Corrosive

PRIMING and FINISHING PAINT

For Engines, Machinery, &c.

This paint being entirely free from acid will not corrode or rust the iron.

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A composition or filling for Tools, Machinery, Engines, Locomotives, Tenders, Iron Ships, and all ironwork for buildings, inside or out. Send for sample card, price list and testimonials.

FELTON, RAU & SIBLEY,

Nos. 136, 138 and 140 N. 4th St., Philadelphia.



Patent Portable Rope Hoist.

The best quick lift made. Quickest,

lightest and cheapest.

Three sizes 500, 1000 and 2000 lbs. Just

the thing for quick lifting and lowering.

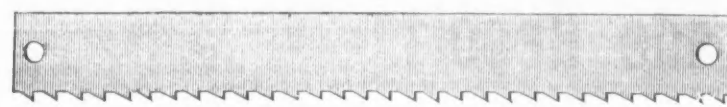
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ANY HARDWARE DEALER

in any place can have all the trade in

BUTCHER SAW BLADES

if he will take the trouble to show the Star Blades to the Butchers and permit them to try their quality. There is not a single place where these Blades have been used that they have not taken and held the market. They can be sold for 10 Cents each, and that is less than the cost of filing a common saw. They are so hard that one will cut three or four times as long as the saws now in use without filing. As these Saws are not to be filed, and as one only lasts a few months before getting dull, a great many of them are wanted. They are listed on the 50th page of our new Catalogue which we will send on demand.

MILLERS FALLS CO., 93 Reade St., New York.

STAR BUTCHER ★ SAW BLADES.

Length.	Width.	Gauge.	Teeth to Inch.	Per Dozen.
14 and 16 in.	1 in.	24	9½	\$1.08
18 " 20 "	"	24	9½	1.20
22 " 24 "	"	24	9½	1.32



CHAMPLAIN
Forged Horse Nails.
MANUFACTURED BY THE
NATIONAL HORSE NAIL CO.,
Vergennes, Vermont.
HOT FORGED AND COLD HAMMERED POINTED. MADE OF BEST
NORWAY IRON AND WARRANTED
WAREHOUSE
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J. C. McCARTY & CO. Sole Agents.

INDURATED FIBRE WARE.

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Pails,

Spittoons,

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Slop Jars,

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Stands,

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Manufacturers of Stamped Brass, Silvered and Tin Goods, Hyatt's Patent Brass and Iron Spring Bolts, Bronze and Plated Thimbles, Roses, Plate Escutcheons, Socket Shells, &c. Mucilage Brushes, Patent Mirror Pin Cushion Business Cards, Mirrors for Perfume Bottles, Hyatt's Patent Sensible Safety Pins. Novelties of New Designs made to order.

Salesroom, 88 Chambers St., New York. Factory, 250 to 254 State St., B'klyn.

WALPOLE

MILLS.

EMERY

SOUTH WALPOLE, MASS.

Imports.

The Imports of Iron and Steel, Hardware, &c., at this port from October 4 to October 10, inclusive, were as follows:

Iron and Steel.		Tons.
Pig Iron: Crocker Bros.	1,300	
A. Milne & Co.	1,087	
Naylor & Co.	190	
G. W. Stetson & Co.	350	
N. S. Bartlett	200	
Henderson Bros.	110	
Iron Ore: J. M. Ceballos & Co.	2,335	
R. De Flores	854	
Spiegelberg: Naylor & Co.	1,312	
J. Abbott & Co.	800	
Crocker Bros.	261	
C. L. Pierson & Co.	35	
Old Iron Rails: Dunn & Co.	300	
G. W. Stetson & Co.	300	
James E. Pope, Jr.	167	
Neumark & Gross	250	
Steel: W. F. Wagner	28	
J. Abbott & Co.	23	
J. A. Coo	5	
G. Hugill	7	
G. Lundberg	50	
C. F. Boker	4	
C. W. Power	11	
R. H. Wolff & Co.	1,823	
Steel Rods: Naylor & Co.	22	
Cary & Moen	80	
R. H. Wolff & Co.	502	
Iron: G. Lundberg	180	
Muller, Schall & Co.	28	
J. Abbott & Co.	30	
A. R. Whitney & Co.	1,668	
Steel Blooms: Naylor & Co.	10	
Steel Billets: Naylor & Co.	63	
J. Abbott & Co.	41	
Steel Plates: Union Bridge Company	136	
R. F. Downing & Co.	250	
Steel Crop Knives: Naylor & Co.	204	
A. Milne & Co.	113	
Scrap Steel: A. Milne & Co.	40	
Steel Forgings: Thos. Prosser & Son	75	
Steel Nail Rods: J. Abbott & Co.	200	
Naylor & Co.	30	
Wire Rods: G. Lundberg	7	
Sheet Iron: T. B. Coddington & Co.	131	
River Rods: J. Abbott & Co.	115	
G. Lundberg	457	
Charcoal Iron: A. Milne & Co.	100	
Iron Girders: R. F. Downing & Co.	50	
Old Fish Plates: L. L. S. Berger	49	
Cotton Ties: R. F. Downing & Co.	13,850	
H. E. Coodledge	14,965	
Ferromanganese: Naylor & Co.	8,007	
Russia Sheet Iron: Bruce & Cook	5,811	
Phelps, Dodge & Co.	4,457	
Dickerson, Van Duzen & Co.	2,949	
Naylor & Co.	2,728	
A. A. Thomson & Co.	1,754	
N. L. Cort & Co.	1,431	
T. B. Coddington & Co.	1,431	
Pratt Mfg. Co.	433	
Wolff & Reising	220	
G. B. Morewood & Co.	1,905	
H. Whittemore & Co.	1,418	
C. S. Mersick & Co.	240	
R. Crooks & Co.		
H. R. DeMitt & Co.		
Merchant & Co.		

Tin Plates.		Boxes.
Phelps, Dodge & Co.	14,965	
Dickerson, Van Duzen & Co.	8,007	
Naylor & Co.	5,811	
A. A. Thomson & Co.	4,457	
N. L. Cort & Co.	2,949	
T. B. Coddington & Co.	2,728	
Pratt Mfg. Co.	1,754	
Wolff & Reising	1,431	
G. B. Morewood & Co.	1,431	
H. Whittemore & Co.	433	
C. S. Mersick & Co.	220	
R. Crooks & Co.	1,905	
H. R. DeMitt & Co.	1,418	
Merchant & Co.	240	

Tin: Phelps, Dodge & Co.		Pounds.
American Metal Co.	22,624	
D. Thomson & Co.	22,422	
Lead: American Metal Co.	331,078	

Antimony: Phelps, Dodge & Co.		Casks.
Hardware, Machinery, &c.		
Baker, Hermann & Co., Hdw., cs., 10; Mde., cs., 4		
Dodge, Alfred, Mde., cs., 18		
Ellsworth & Western Mach'y, cs., 2		
Field, Alfred & Co., Mde., cs., 11; Anvil, 27; Bedsteads, bds., 58; Percussion Caps, cs., 14		
Frasse, P. & Co., Hdw., cs., 8		
Graef Cutlery Co., Mde., cs., 14		
Hartley, Graham & Co., Mde., cs., 38		
Jackson, R. D. & Co., Guns, cs., 1		
Johnson, John & Co., Mach'y, pcs. and pkgs., 84		
Kastor, A., Cutlery, cs., 7		
Lazarus & Rosenfield, Hdw., &c., cs., 70		
Lewis & Conner, Hdw., cs., 4		
McCoy & Sanders, Mde., cs., 4		
Morris, L. W. & Son, Hdw., case, 1		
Schoverling, Daly & Gales, Guns, cs., 4		
Schultz, W. & Co., Mde., cs., 14		
Taylor, Thos., Mde., cs., 2		
Pim, Forward & Co., Hdw., pkgs., 5		
Ward, Asline, Mde., cs., 4		
Wielusch & Hilger, Mde., cs., 9		
Witte, John G. & Bro., Mde., cs., 10		
Order-Hdw., cs., 3; Mach'y, pkgs., 74; Hollowware, cs., 5; Ironware, pkgs., 32; Wire Laths and Nails, cs., 12; Steelware, cs., 34		

Irons and Metals Warehouse from October 4 to October 10, inclusive.		Tons.
Old Iron Rails: Martin & Co.	1,713	
Dana & Co.	740	
Stroud & Co.	497	

Exports of Metals from October 4 to October 10, inclusive.		Pounds.
Copper Matte: Williams & Terhune	1,351,831	
Copper: American Metal Co.	50,000	
H. T. Nichols	199,098	
J. Abbott & Co.	31,350	
Old Brass: Burgess & Co.	9,206	
Old Copper: Burgess & Co.	28,736	

Old Metals, Rags, &c.		Tons.
Heavy Copper	\$0.07	
Light Copper	06	
Copper Bottoms	06	
Brass, Heavy	06	
Brass, Light	04	
Composition	08 1/2	
Lead, Heavy	\$0.03 1/2	
Tea Lead	03 1/2	
Zinc	03 1/2	
Wrought Iron	12.00	
Light Iron	12.00	
Stove Plate Iron	12.00	
Machinery Iron	15.00	
Grate Bars	7.00	
Old Rubber	0.5	
White No. 1	0.03 1/2	
White No. 2	0.03 1/2	
Canvas, Linen, No. 1	0.04 1/2	
Canvas, Cotton, No. 1	0.04 1/2	
Canvas, No. 2	0.04 1/2	
Seconds	0.01	
Soft Woollens	0.01 1/2	
Mixed Rags	0.01 1/2	
Gunny Bagging, No. 1	0.02 1/2	
Gunny Butts	0.02 1/2	
Book Stock	0.03 1/2	
Newspapers	0.01	
Waste Paper	0.01 1/2	
Kentucky Bagging	0.04 1/2	
Kentucky Bale Rope	0.04 1/2	
Kentucky Bagging	0.03 1/2	

The purchasing prices offered by dealers are as follows:		Tons.
Heavy Copper	\$0.07	
Light Copper	06	
Copper Bottoms	06	
Brass, Heavy	06	
Brass, Light	04	
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Kentucky Bagging	0.03 1/2	

White No. 1.	lb	0.03	66	0.034
White No. 2.	lb	0.03	66	0.034
Canvas, Linen, No. 1.	lb	0.04	66	0.041
Canvas, Cotton, No. 1.	lb	0.04	66	0.041
Canvas, No. 2.	lb	0.02	66	0.021
Seconds.	lb	0.01	66	0.011
Soft Woollens.	lb	0.01	66	0.011

GEO. W. CHURCH.
GEO. W. MONTGOMERY.
CHURCH'S PATENT IMPROVED
DOUBLE SEED INDICATOR
Either Right or Left.
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Safety, Maximum Economy in Fuel, Lowest Cost of Maintenance,
Greatest Durability, Large Steam and Water Spaces,
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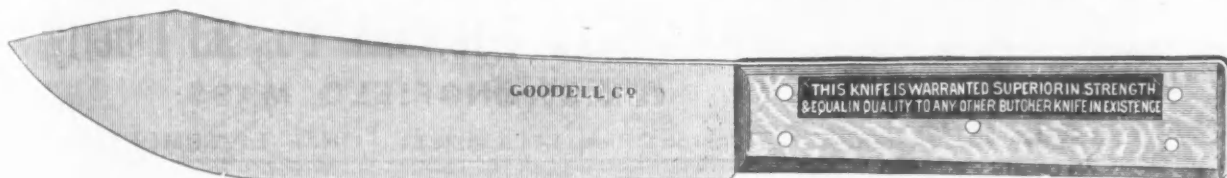
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Our Butcher Knives are stronger, better shaped, finer finished, superior in cutting qualities, and cheaper than any other butcher knives made. Our Table Knives are unsurpassed, and we make the largest and best line of Shoe Knives known. There is no satisfaction in selling goods of an inferior quality when the best can be had for the same money. Illustrate Price List sent on application.

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THE BABCOCK & WILCOX CO.
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107 MOPE ST
GLASGOW, SCOTLAND.

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WATER TUBE STEAM BOILERS.

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PATENT
TRANSOM
LIFTER
AND LOCK
FOR ALL KINDS OF
TRANSOMS, FANLIGHTS,
SKYLIGHTS.
SEND FOR CATALOGUE AND
PRICE LIST.
J.F. WOLLENSAK,
PATENTED AND MADE IN U.S.A.
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NORRISTOWN IRON WORKS.

Manufacturers of
Wrought Iron, Steam
Gas and Water Pipe
from 1/4 to 2 1/2 in. inclusive.

JAMES HOOVEN & SON.
Norristown, Pa.
Established 1846.

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OIL STOVES
ARE BEST FOR ALL PURPOSES
FOR SALE EVERYWHERE
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BUCKET LAWN MOWERS,
BUCKET ROSE REELS AND
LAWN SPRINKLERS.
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The Original Inventors and Manu-
facturers of the

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Bright Metal Cages, in Brass, Bronze and Silver Plate.

NEW AND BEAUTIFUL DESIGNS JUST OUT.

We also Manufacture Brass and Bronze Show Stands for Fancy Goods Catalogues Mailed Free.



CURTIS PRESSURE REGULATOR,

For Steam, Water or Air.

This Pressure Regulator will automatically control the pressure of Steam, Water or Air, at any point desired, regardless of the variation of the initial pressure. Occupying no more space than any Globe Valve. It is now in general use for House Heating, Factories, Hotels and Public Buildings, Steam Drives, Jacket Kettles, Slushers, Dye Houses and Bleacheries, Sugar Houses, Water Motors, Canning of Fruit and Ice Machines, Vulcanizers for Rubber Works, Steam Pumps for creating uniform water pressure, Railroad tr. ins to control steam in cars, Hydraulic Elevators, Breweries, Disinfectors, Automatic Sprinklers, and on Steam Engines used by Electric Light Companies.

This Regulator must not be confused with the ordinary Reducing Valves in the market, as its construction admits of creating positive action under all circumstances. Send for Circular and Price List.

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The Remington System Breech Action is too well known to need comment. These are same Guns we have been selling for several years. GUARANTEED the best Gun for the money extant.

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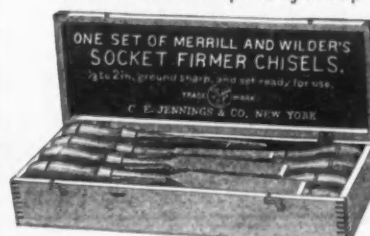
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These Tools are tempered by an improved process, insuring a Perfect Cutting Edge.



THIS CUT ILLUSTRATES A NO. 10 SET IN FANCY BOX.

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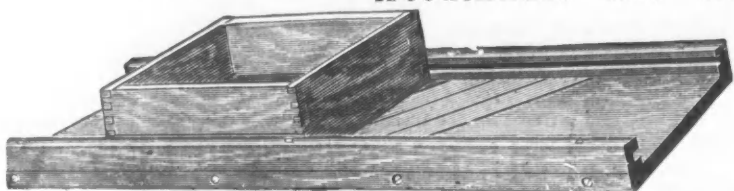
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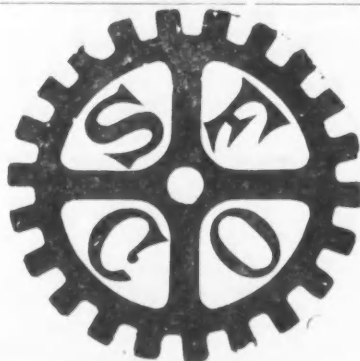
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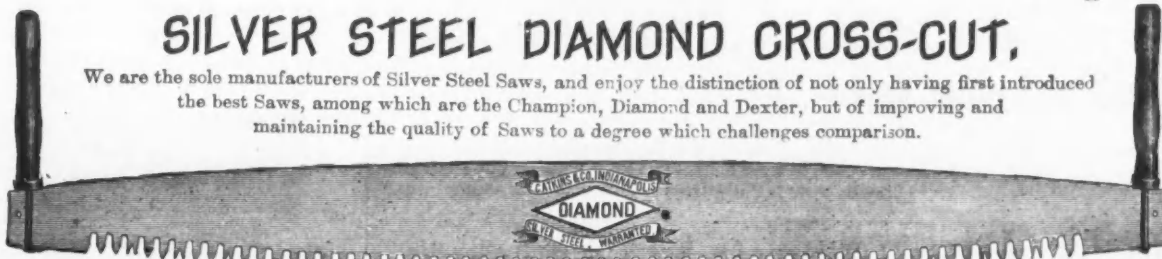
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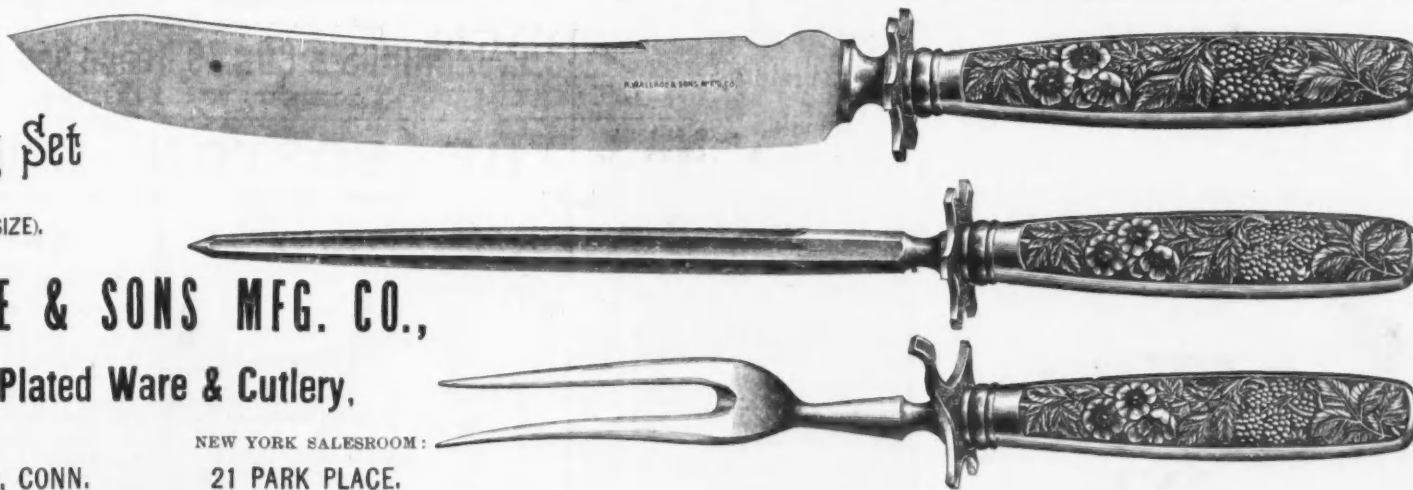
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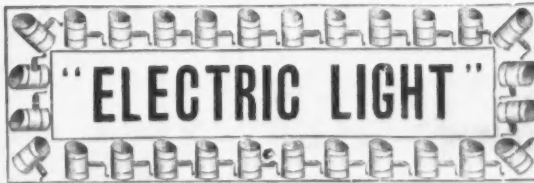


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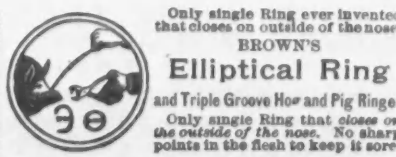
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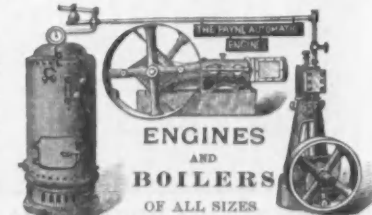
that closes on outside of the nose

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Elliptical Ring

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Only single Ring that closes on the outside of the nose. No sharp points in the flesh to keep it sore



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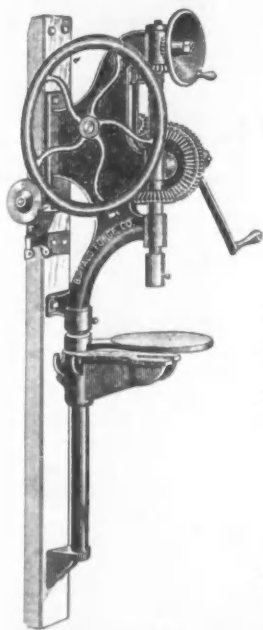
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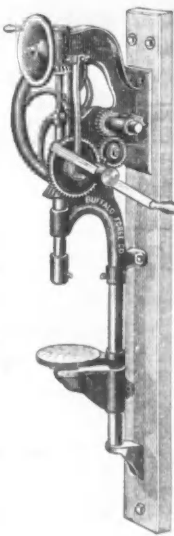
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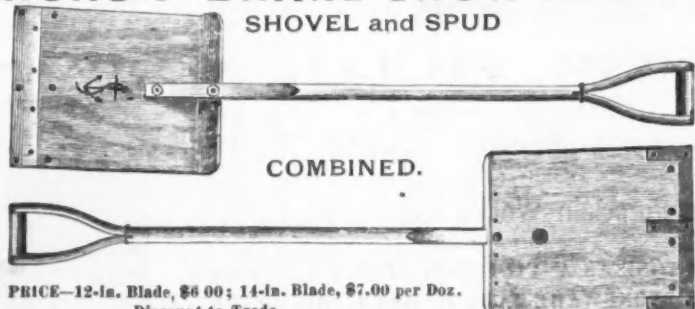


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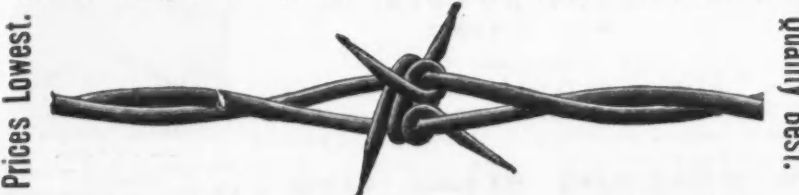
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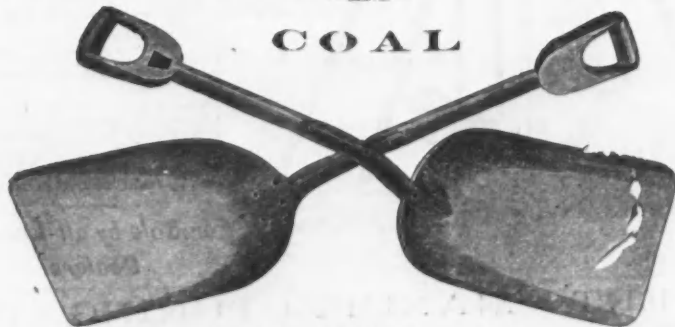
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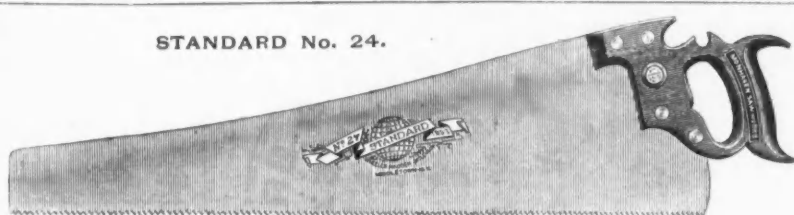
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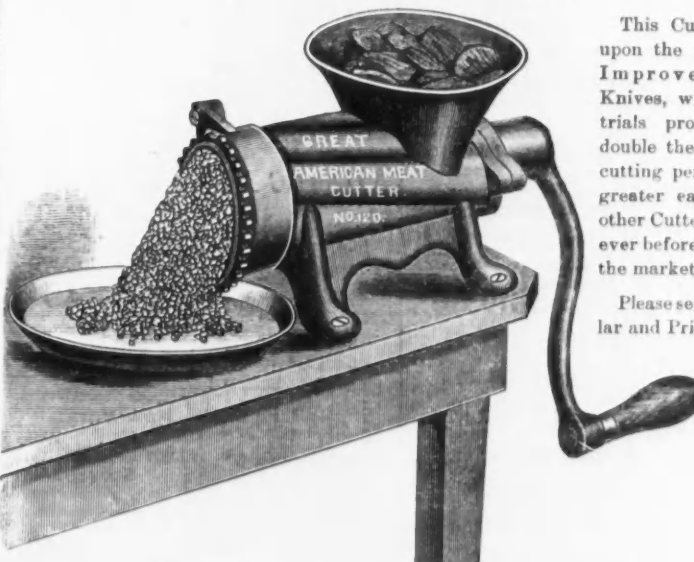
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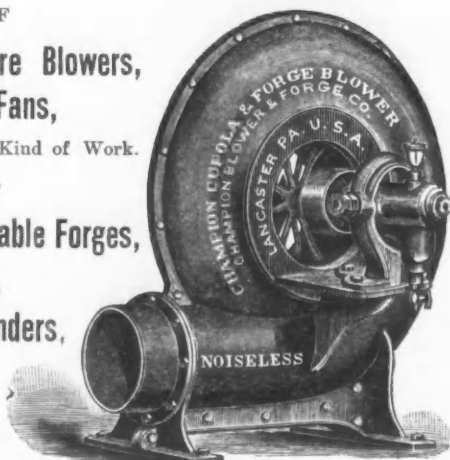
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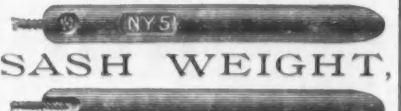
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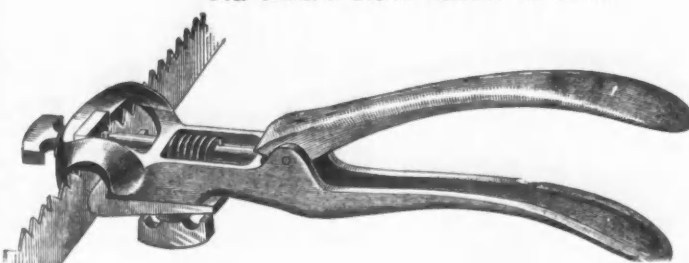
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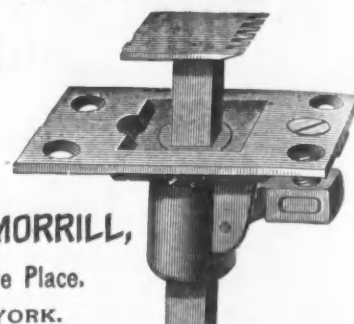
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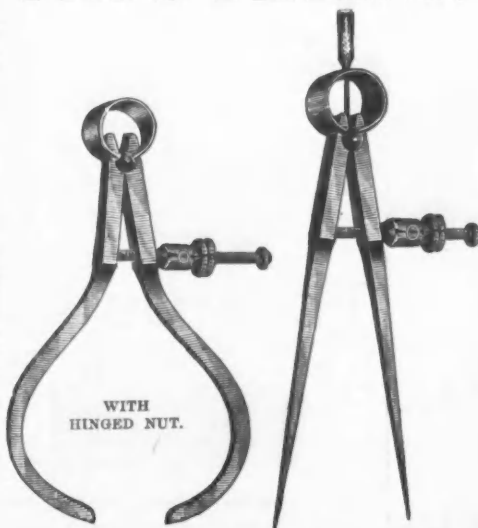


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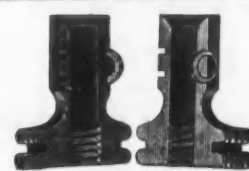
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WITH
HINGED NUT.

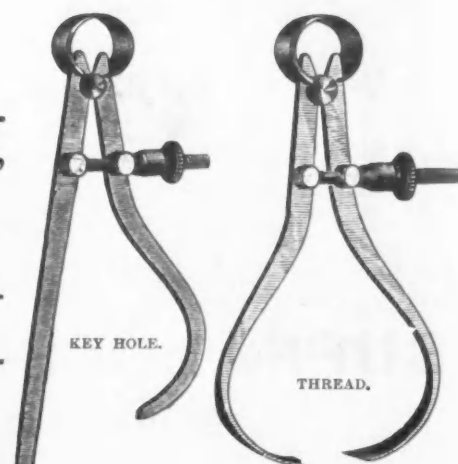
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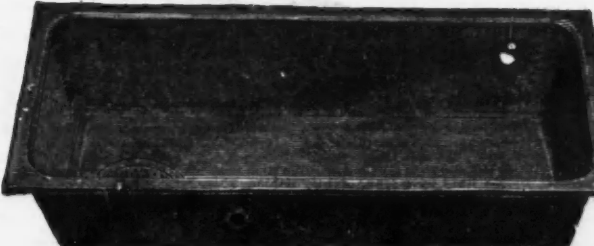
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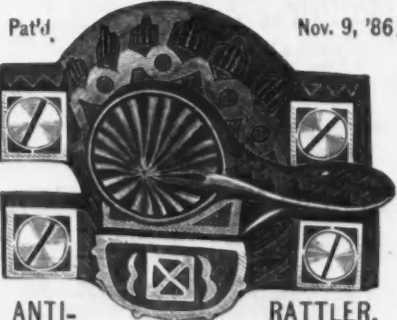
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has standards 9 feet 10 inches long, with a spread of
about 6 feet, and 5 feet in width. The frame work
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of the two cross pieces the frame can be closely
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up or taken down ready for packing in 10 minutes.

The weight of the Swing is a little
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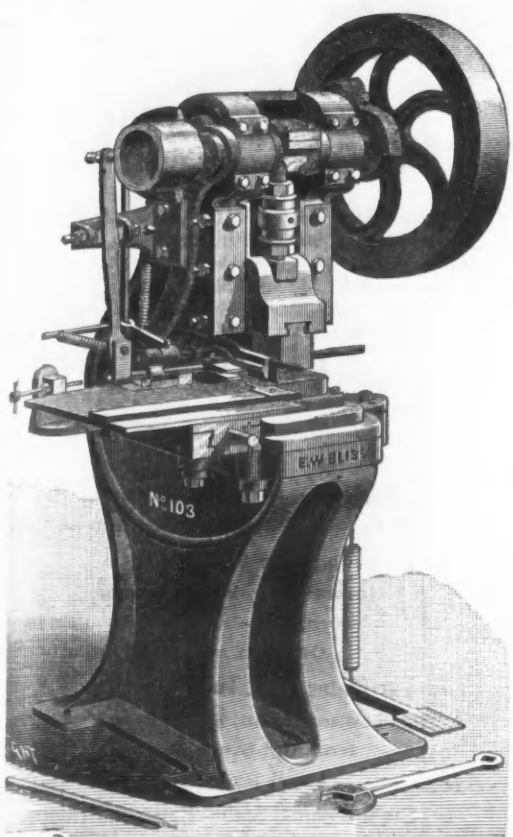


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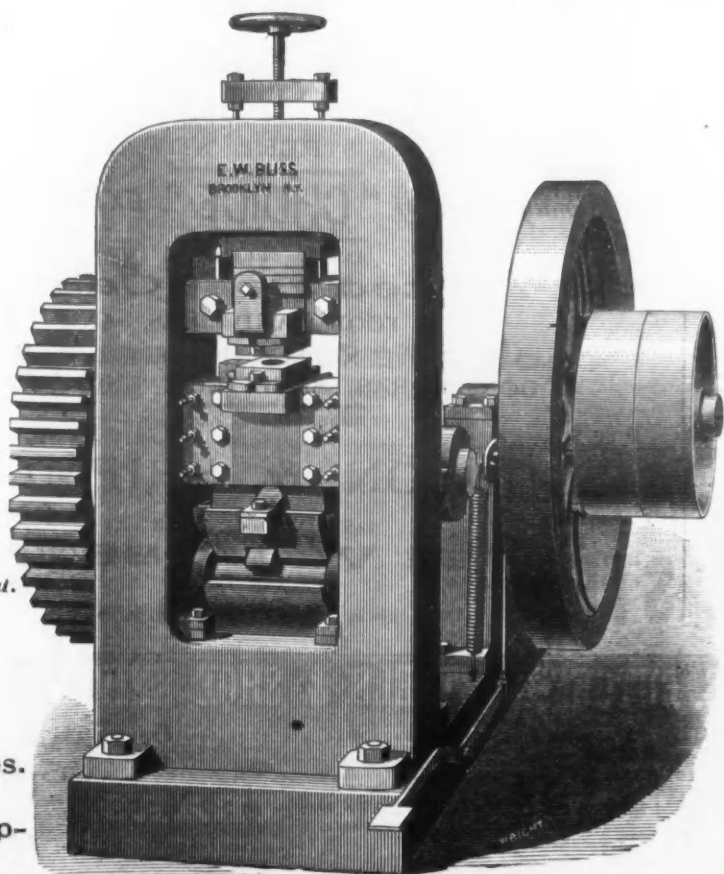
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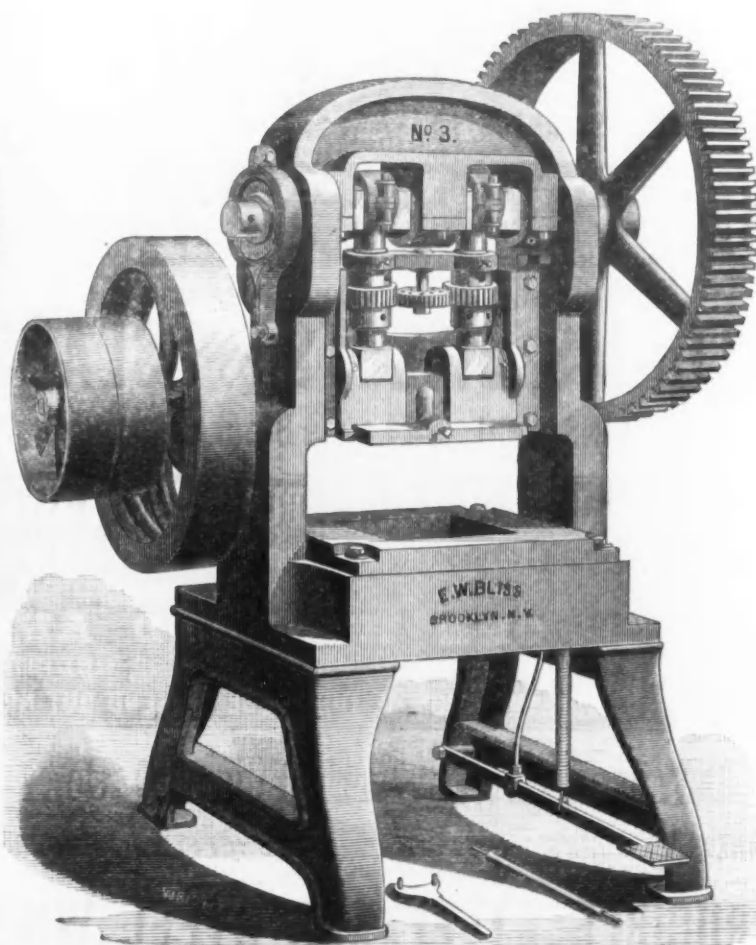
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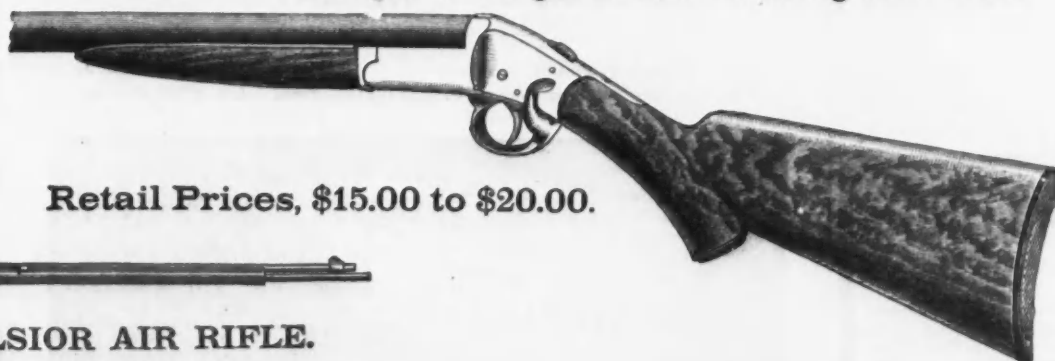
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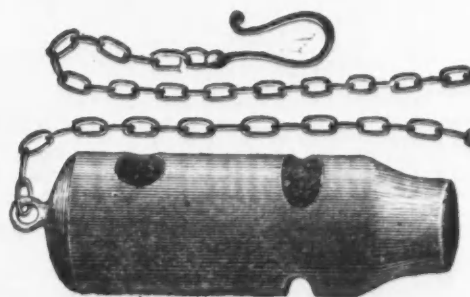
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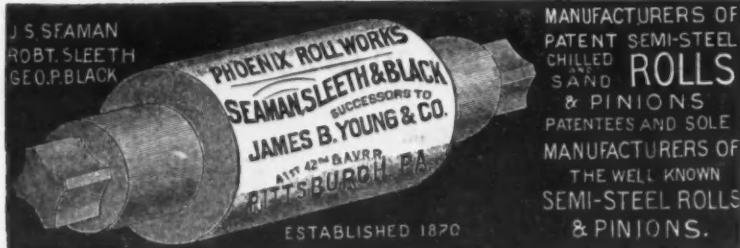
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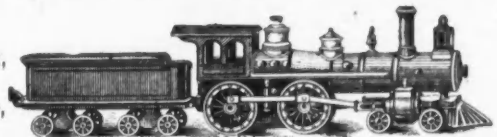
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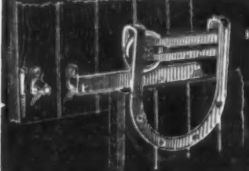
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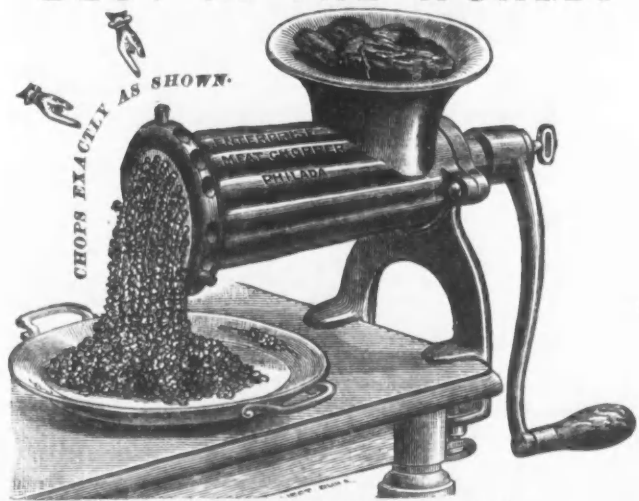

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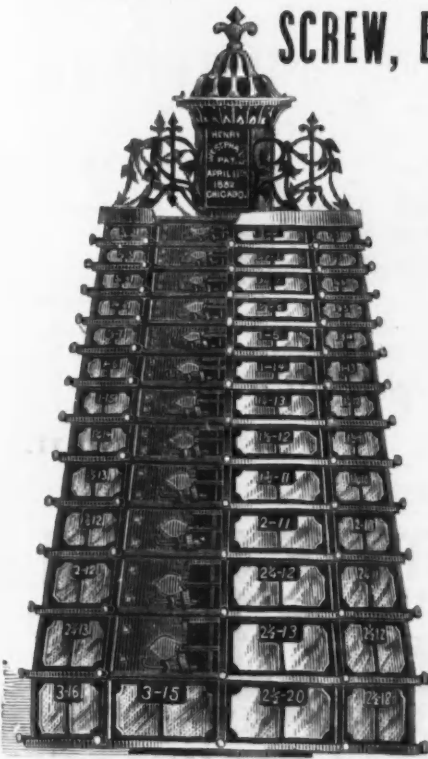



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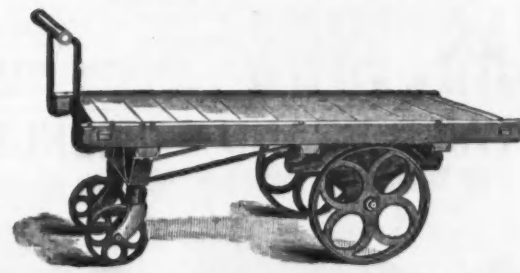
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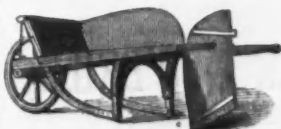


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These Plumbago Metals cannot be excelled for the prices. They require but little oil at high speed, and I will deliver them in boxes of 65 or 125 lb., less Freight, Cartage, Boxing, &c. Try them, and convince yourself of their merits.
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**Strap and T Hinges,
CRATE HINGES AND HASPS,
Ship Scrapers, Iron Washers.
BRAIDED WIRE PICTURE CORD,**

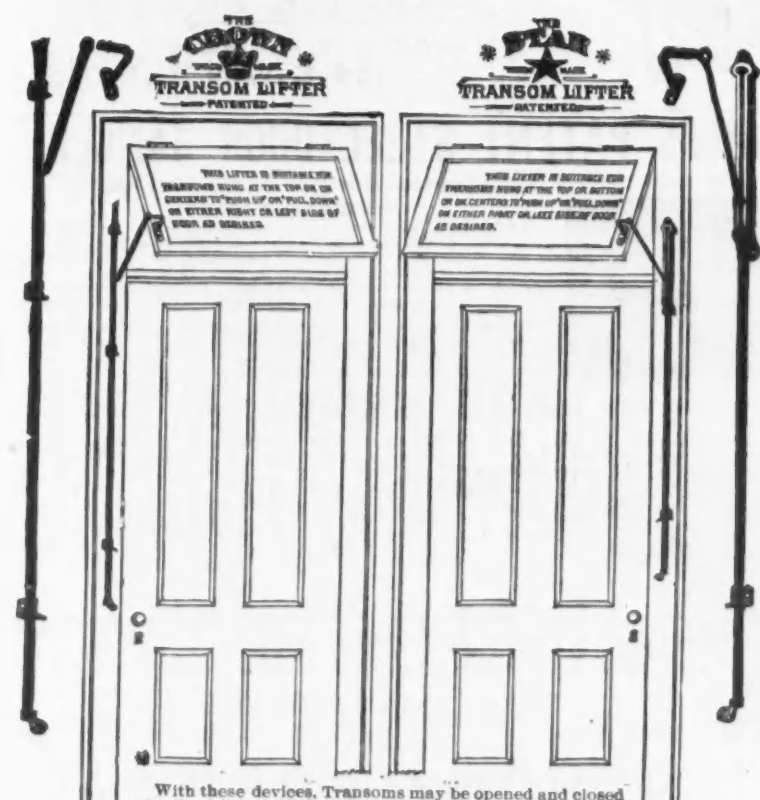
Tinned, Gilt and Gold, put up in small round boxes of 25 yds. and 25 feet, warranted full length; cord pulled out through hole in center of box.

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With these devices, Transoms may be opened and closed at will with ease and locked in position, no other fastenings are required, any one can put them on. CAUTION, look for the Trade Mark on the handles.
We are now prepared to fill orders for the "Crown" and "Star" Lifters, in such sizes as are listed below, which are suitable for house and office transoms, and hope soon to announce our ability to supply sizes for store transoms.

Price List "Crown" Lifters.				Price List "Star" Lifters.			
No.	Length	Size of Rod.	Price Each.	No.	Length	Size of Rod.	Price Each.
43	3 feet	3/4 X 1/2	Bronzed Iron, \$0.55	83	3 feet	3/4 X 1/2	Bronzed Iron, \$0.70
44	4 "	"	" 0.65	84	4 "	"	" 0.80
45	5 "	"	" 0.75	85	5 "	"	" 0.90
43 1/2	3 "	"	Nickel Plated, 1.75	83 1/2	3 "	"	Nickel Plated, 2.00
44 1/2	4 "	"	" 2.00	84 1/2	4 "	"	" 2.25
45 1/2	5 "	"	" 2.25	85 1/2	5 "	"	" 2.50

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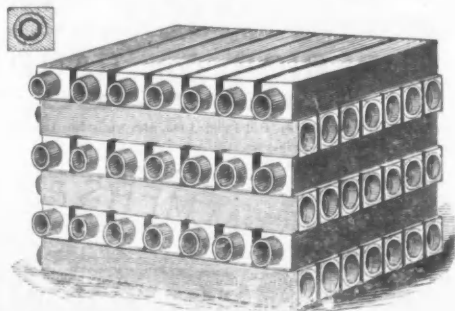
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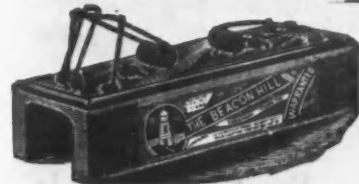
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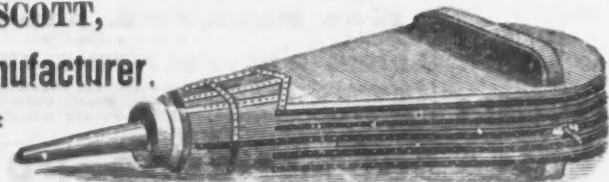
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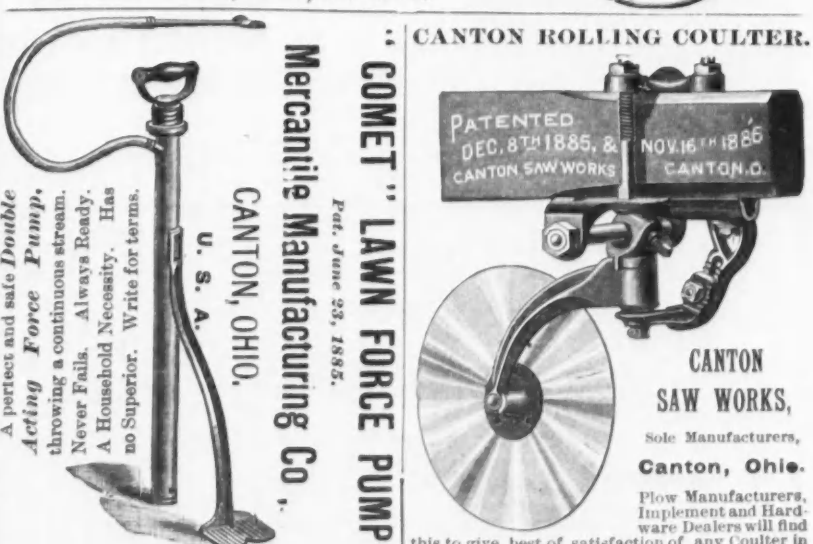
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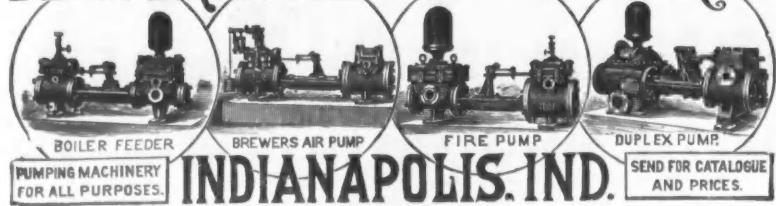
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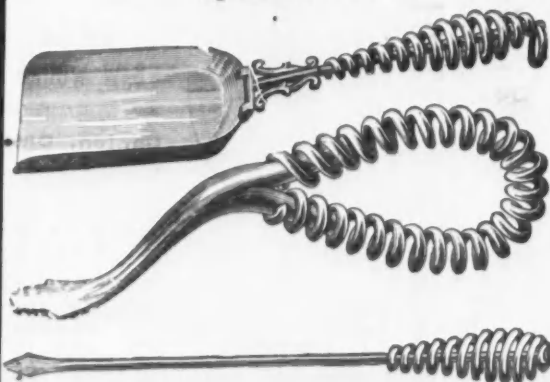
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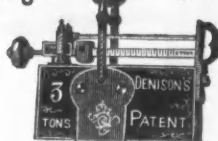
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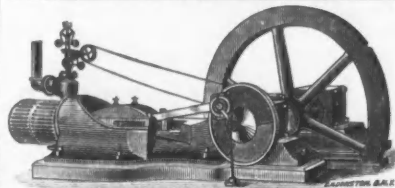
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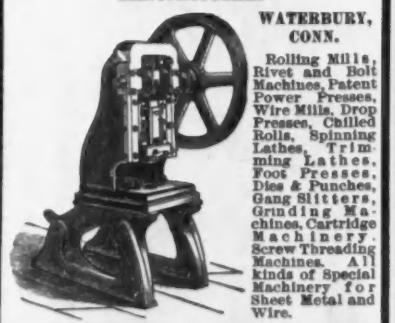
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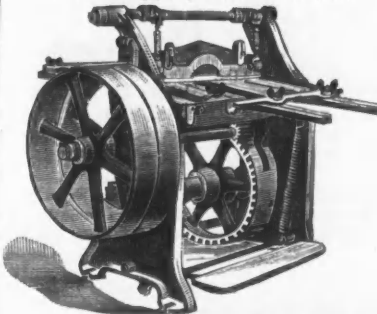
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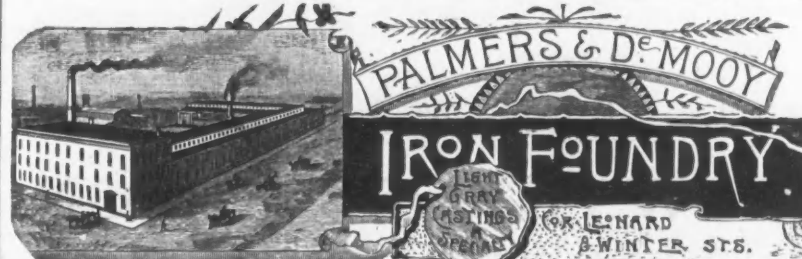
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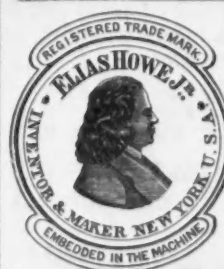
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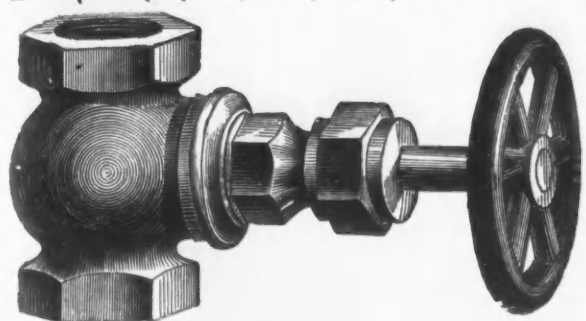
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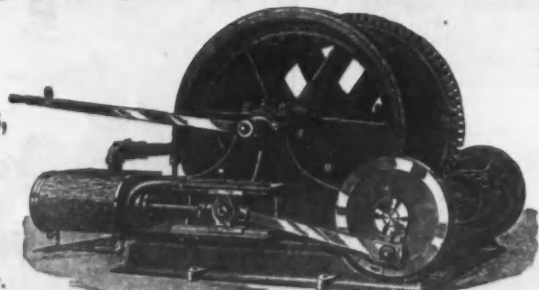
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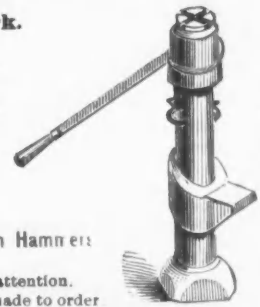
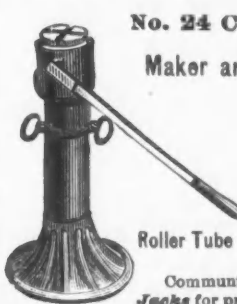
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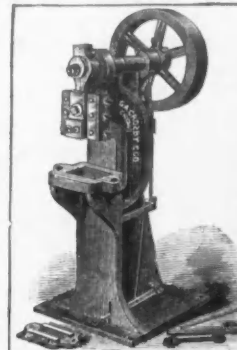
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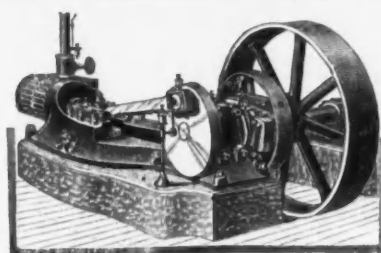
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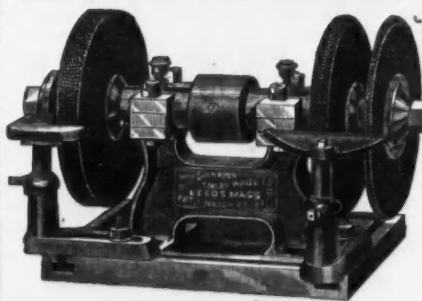
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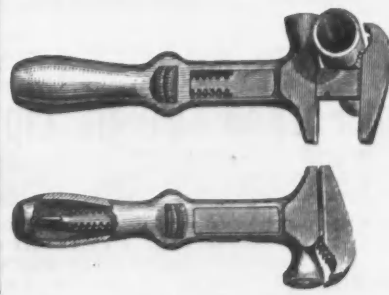
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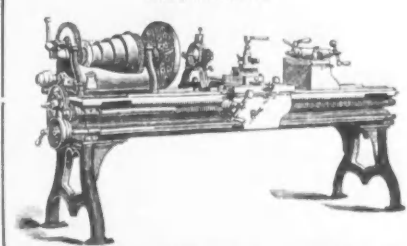
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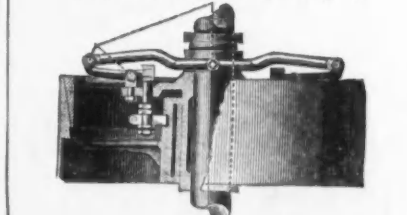
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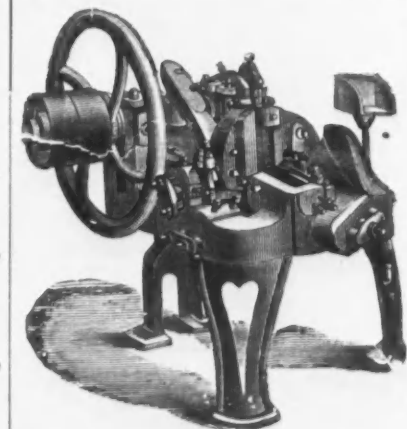
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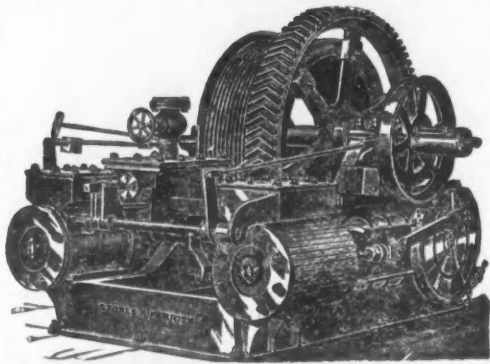
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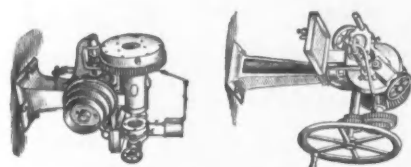
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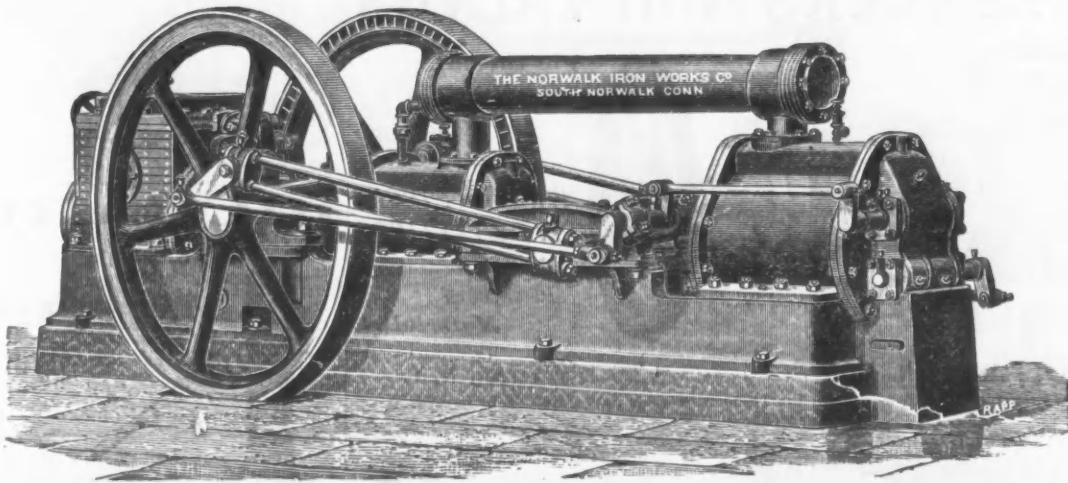
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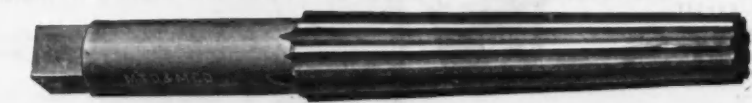
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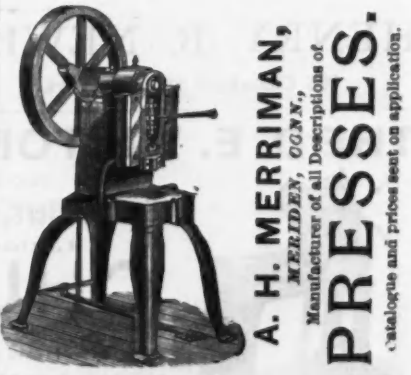
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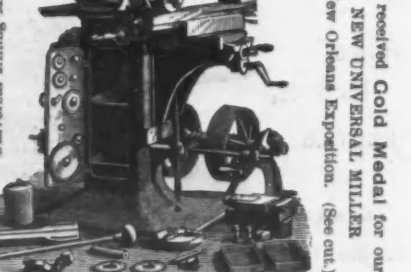
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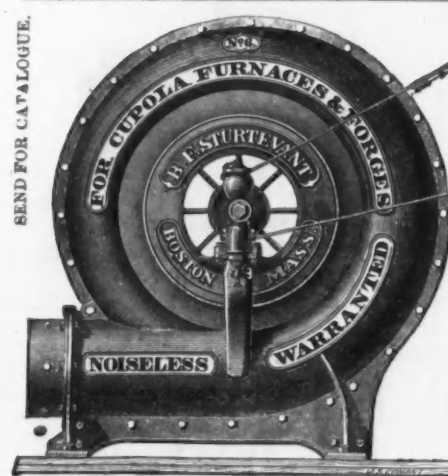
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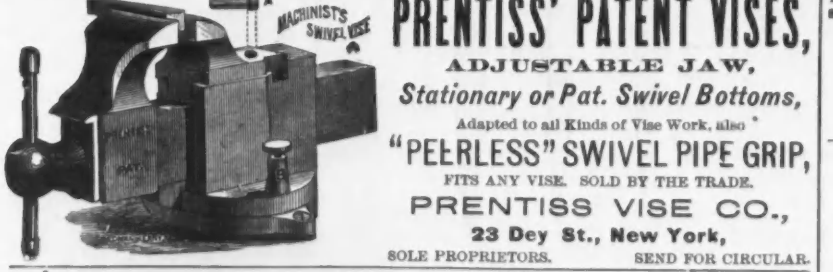
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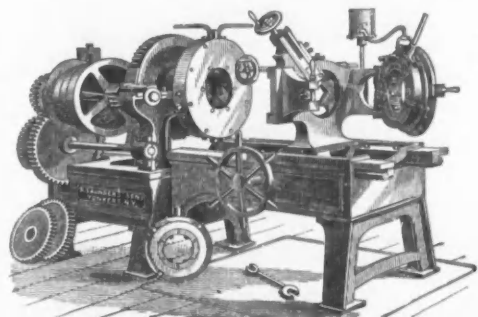
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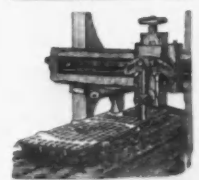
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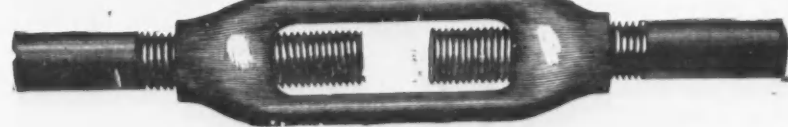
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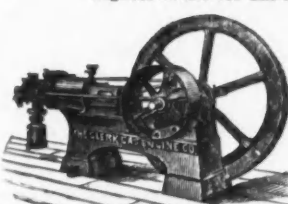
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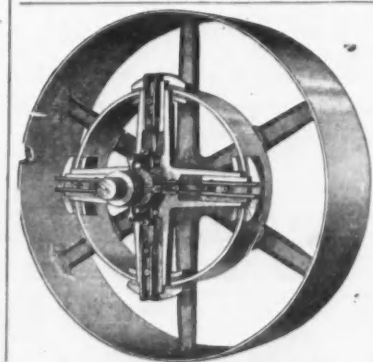
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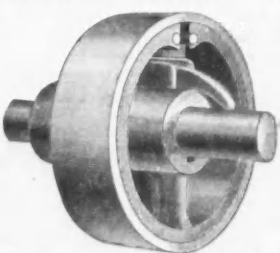
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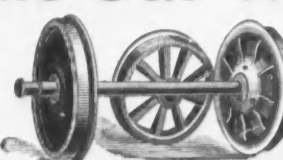
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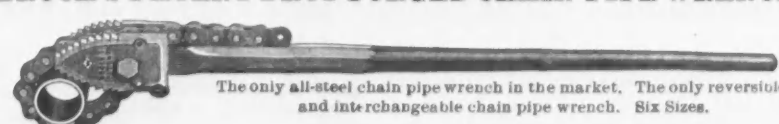
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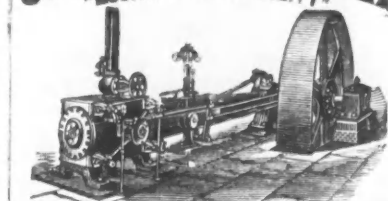
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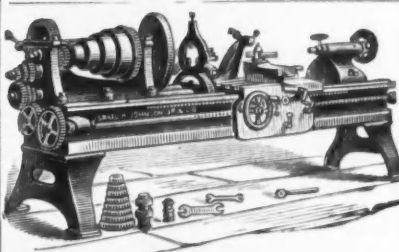
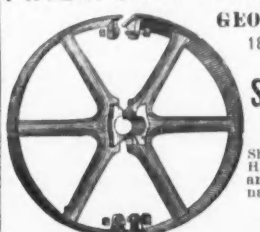
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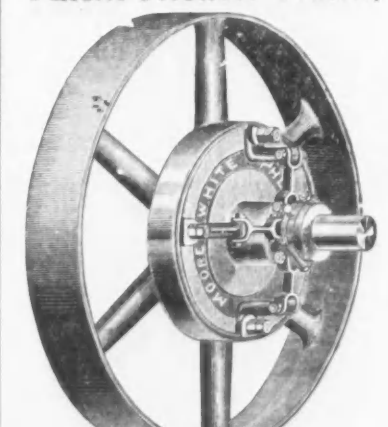
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